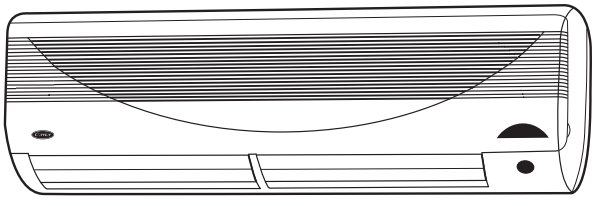
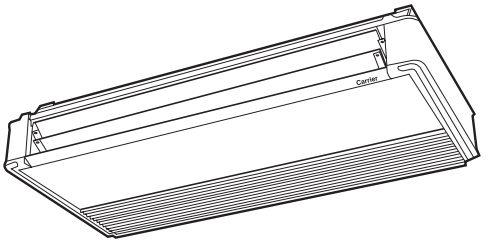
Product Data

53QAB/53QKB/53QNB Duct-Free Cooling Only Split Systems

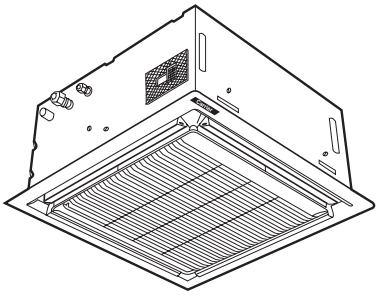
¾ to 5 Nominal Tons



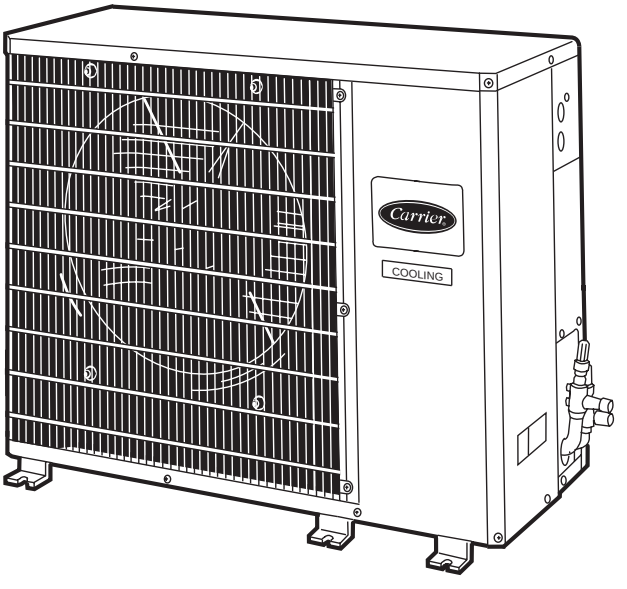
40QNB



40QAB



40QKB



38HDC

The Ideal Complement to Your Ducted System When It Is Impractical or Prohibitively Expensive to Use Ductwork

- choice of 3 compact, attractive fan coil types for ultimate flexibility in any room decor
- wide range of accessories available to meet a variety of installation requirements

Features/Benefits

An inexpensive and creative solution to design problems

Carrier's cooling only duct-free split systems are a matched combination of an outdoor condensing unit and one of 3 decorative indoor fan coil units connected only by refrigerant tubing and wires. One of the 3 fan coil choices will fit any application you might encounter.

The fan coils can be mounted on the wall, at the ceiling, or in the ceiling. This selection of fan coils permits inexpensive and creative solutions to design problems such as:

- add-ons to current space (an office or family room addition)
- special space requirements (a computer room)
- when changes in the cooling load cannot be handled by the existing system (when adding heat-generating equipment to a currently conditioned space)
- when adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork
- historical renovations or any application where preserving the looks of the original structure is essential

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These compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at high efficiencies and low sound levels.

Carrier's duct-free split systems offer the solution of choice. The compressor is outdoors, linked by refrigerant lines to an indoor fan coil located directly in the room it will cool. These systems have minimal impact on the existing structure, and the design and interior of the conditioned space is not compromised by bulky ductwork. Because of these features, Carrier's duct-free split systems can be installed in places where conventional ducted cooling simply cannot go.

Low sound levels

When noise is a concern, the duct-free split systems are the answer because you don't have to worry about duct design. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through ductwork. The indoor units are whisper quiet. The outdoor units operate at sound levels as low as 6.6 bels, and are the perfect answer to sound level ordinances.

When sound ordinances and proximity to neighbors demand ultra-quiet operation, the 38HDC and 38AN are the right choices: The advanced, horizontal airflow design distributes air more evenly over the coil. On 38HDC units, the coil also acts as an extra sound-supressing device before the air is discharged at a very low velocity.

High efficiency

With SEERs (seasonal energy efficiency ratios) up to 12.0, the Carrier duct-free split systems save energy and may qualify for utility company rebates in some areas.

Secure operation

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork. In addition, since 38HDC and 38AN units can be installed 6 in. away from outside walls, coils are protected from vandals and severe weather.

Fast installation

Carrier's compact duct-free split systems take only a few hours to install, since only wire and piping need to be run. The fast and easy installation ensures minimal disruption to customers in the home or workplace. This is an added advantage of Carrier's duct-free split systems, especially in retrofit situations.

Features like mounting brackets and templates make the unit very easy to install. In fact, the ceiling-suspended units are furnished with indoor-to-outdoor connecting cables.

Simple servicing and maintenance

Removing a single panel on outdoor units provides immediate access to the isolated compressor and control compartment, allowing a service technician access to check unit operation without a loss of condenser airflow. In addition, on 38HDC units, the blow-thru design of the outdoor section means that dirt accumulates on the inside surface of the coil. Coils can be cleaned quickly from the outside using a pressure hose and detergent without removing grilles or using fin combs.

On indoor units, service and maintenance expense is reduced due to easy-to-change cleanable filters on all units. In addition, the high wall and ceiling-suspended systems have extensive self-diagnostics to assist in troubleshooting. All units have easy-access coils and cleanable condensate pans to assist in meeting indoor air quality standards.

Both refrigerant service valves are brass, front-seating type with sweat (38HDC) or flare (38AN) connections. The valves are externally located so refrigerant tube connections can be made quickly and easily. Each valve has a service port for ease of checking operating refrigerant pressures (38HDC units). Internal service ports are also provided to make servicing even easier.

Built-in reliability

Carrier duct-free split system indoor and outdoor units are designed to provide years of trouble-free operation.

The high wall indoor units include protection against freeze-up and high discharge temperatures. Other indoor units are protected by outdoor unit controls. All systems include self-diagnostics to ensure reliability.

Carrier's 38HDC condensing units are the only dedicated commercial units with all safety features standard to ensure high performance and lasting reliability under the most demanding situations. For example, an accumulator safeguards the compressor against loss of lubrication, while start capacitors and relays (non-scroll units) assure dependable start-ups, especially during low voltage conditions down to 187 v. High- and low-pressure safety switches, liquid line filter drier, and lock-out protection are standard on most sizes and Time Guard® compressor protection can be included.

NOTE: Time Guard compressor protection is an accessory when condensing unit is matched with 40QAB or 40QKB fan coil units. Compressor start-up delay through the controller is standard for these units and the 40QNB unit.

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Features/Benefits (cont)

The totally-enclosed condenser-fan motor means greater reliability under rain conditions, ensuring dependable performance for many years.

Individual room comfort

Maximum comfort is provided because each space can have individual set points and may be controlled based on actual usage. The air sweep feature provided on high wall and ceiling-suspended systems permits optimal room air mixing to eliminate hot and cold spots to enhance occupant comfort.

In addition, year-round comfort can be provided by combining standard cooling outdoor units with heat pump versions of the in-ceiling and ceiling-suspended fan coil units. This combination provides electric heating capability.

Economical operation

Carrier's duct-free split system design allows individual room cooling only where required. There is no need to run large supply-air fans or chilled water pumps to handle a few spaces with unique load patterns. In addition, because air is moved only in the space required, no energy is wasted moving air through ducts.

Features like the permanent split-capacitor type motors provide more economical operation, and the rifled copper tube with louvered aluminum plate fin coil provides maximum heat transfer.

Lightweight, compact size

The small footprint of these units provides additional benefits. Carrier's exclusive aeroacoustics makes these units the most compact in the industry. Because they require minimal service and airflow clearances, condensing units can be located virtually anywhere — on the ground, roof, balcony, under a deck, or even mounted to an outside wall.

The outdoor unit can be mounted on any type or weight roof, and the indoor units take up little valuable, rentable space. Because they are duct-free, not having to run large duct-work leaves additional space to be rented or utilized, making the building even more profitable.

In addition, the small size makes these units easily moveable. When floor plans change, the units can be quickly reinstalled.

Easy-to-use controls

The microprocessor-based control in the high-wall unit is easy to use, permitting easy changes for maximum comfort. The microprocessor offers the ultimate in comfort and efficiency. All units automatically restart and retain their memories after a power failure, eliminating unnecessary service calls and service disruption. High wall units are equipped with a wireless remote controller. Under-ceiling and in-ceiling cassette units use standard 24 v controls with new solid-state multi-featured electronic thermostats. All units can be easily integrated into most building control systems.

Wide range of accessories

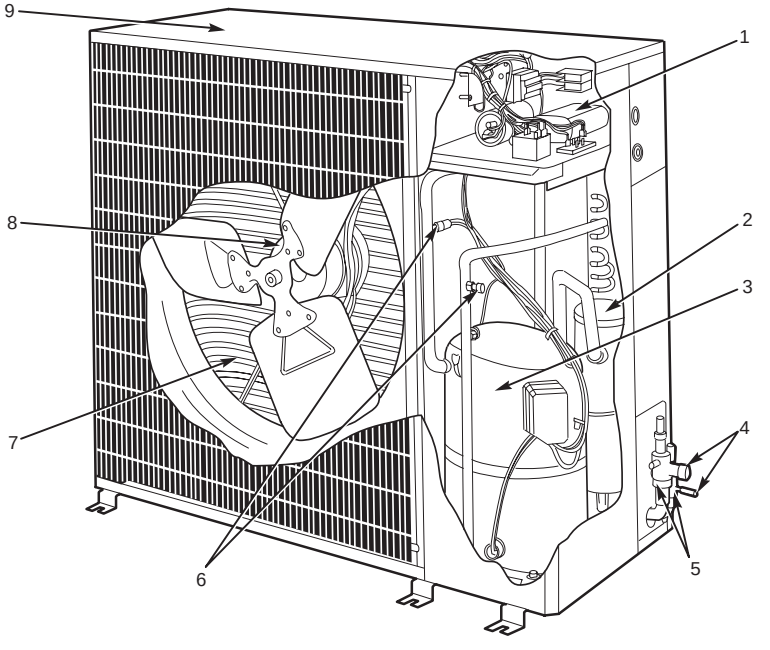
Customizing the Carrier duct-free split systems to your application is easily accomplished through the many accessories available. Low-ambient temperature capability (permitting cooling operation down to –20 F outdoor ambient) is easily added on all units.

Accessories for the high wall and ceiling-suspended fan coils include an internal condensate pump to provide installation flexibility. Condensate pumps are standard on in-ceiling cassettes. Ventilation-air capability is available as an accessory on ceiling suspended units and in-ceiling cassettes. In addition, limited ducting capability is available to connect in-ceiling cassettes (for example, to duct to an adjacent room).

Agency listings

All systems are listed with ARI (Air Conditioning & Refrigeration Institute), UL (Underwriters' Laboratories), CSA (Canadian Standards Association), and CEC (California Energy Commission).

CONDENSING UNITS (38HDC SHOWN)



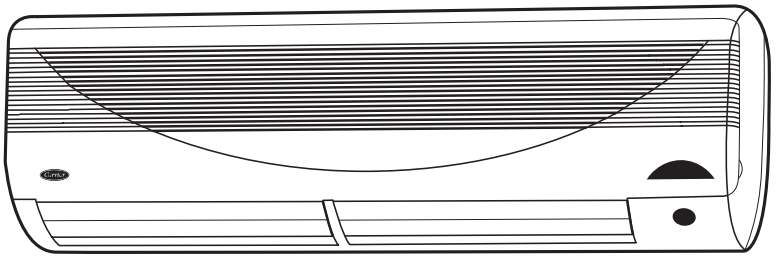
LEGEND

1 — Capacitor Start System to make starting quicker and more reliable (not required on systems with 3-phase or scroll compressors)
2 — Accumulator
3 — High-Efficiency Compressor
4 — Suction and Discharge Service Gage Ports
5 — Solid Brass Service Valves
6 — High- and Low-Pressure Switches to monitor and safeguard compressor
7 — Copper Tube/Aluminum Fin Coil
8 — High-Efficiency Fan Motor
9 — Weatherized cabinet of heavy-duty galvanized steel

Features/Benefits (cont)

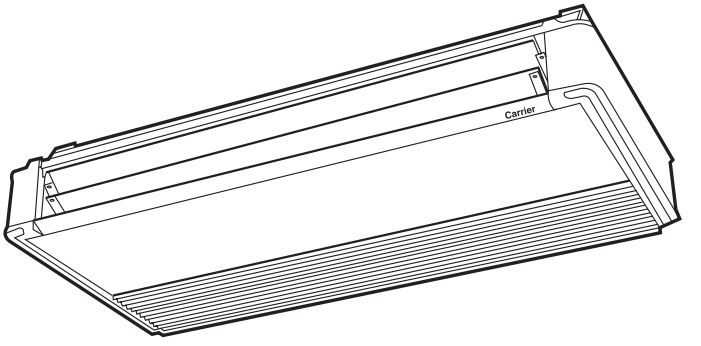
HIGH WALL FAN COILS — 40QNB (¾ - 2 Tons)

High walls are the most cost-effective duct-free split systems. They can be used for simple add-ons and retrofits where wall space is available.



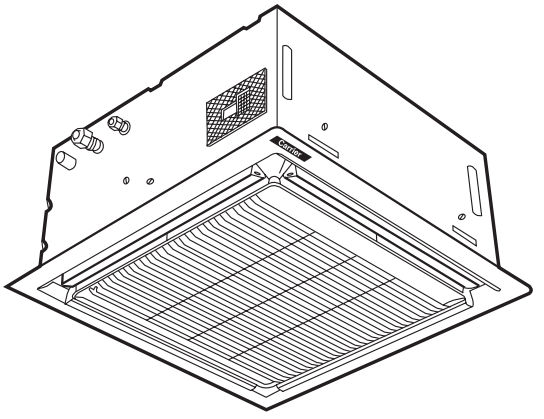
CEILING-SUSPENDED FAN COILS — 40QAB (1½ - 5 Tons)

Use ceiling-suspended systems for office and retrofit applications where there is little or no wall space.



IN-CEILING CASSETTE FAN COILS — 40QKB (1½ - 3 Tons)

Cassette systems are ideal for retrofit and modernization projects with standard 2-ft x 4-ft hung ceilings.



Model number nomenclature

53 SERIES COOLING ONLY DUCT-FREE SPLIT SYSTEMS

53QNB - 009 - - - 1

Model
53QNB — High Wall
53QAB — Ceiling Suspended
53QKB — In-Ceiling Cassette

Voltage Designation*
1 — 115-1-60†
3 — 208/230-1-60
5 — 208/230-3-60
6 — 460-3-60

Nominal Capacity
009 — 3/4 Ton
012 — 1 Ton
018 — 1 1/2 Tons
024 — 2 Tons
030 — 2 1/2 Tons
036 — 3 Tons
048 — 4 Tons
060 — 5 Tons

*System voltage is outdoor unit voltage.
†53QNB009 only.

38 SERIES COOLING ONLY CONDENSING UNITS

38HD C - 024 - - 3

Model
38HD,AN — Air-Cooled Condensing Units

C — For Commercial Duty (HD only)

Voltage Designation
1 — 115-1-60*
3 — 208/230-1-60
5 — 208/230-3-60†
6 — 460-3-60†

Nominal Capacity
009 — 3/4 Ton
012 — 1 Ton
018 — 1 1/2 Tons
024 — 2 Tons
030 — 2 1/2 Tons
036 — 3 Tons
048 — 4 Tons
060 — 5 Tons

*38AN009 only.
†38HDC036-060 only.

40 SERIES COOLING ONLY FAN COILS

40QNB 024 - - - 3

Model
40QNB — High Wall
40QAB — Ceiling Suspended
40QKB — In-Ceiling Cassette

Voltage Designation
1 — 115-1-60*
3 — 208/230-1-60

Nominal Capacity
009 — 3/4 Ton
012 — 1 Ton
018 — 1 1/2 Tons
024 — 2 Tons
036 — 3 Tons
048 — 4 Tons
060 — 5 Tons

*40QNB009 units only.

Model number nomenclature (cont)

SYSTEM AND COMPONENT AVAILABILITY

SYSTEM OR COMPONENT	SIZE							
	009	012	018	024	030	036	048	060
53QNB	X	X	X	X				
53QAB			X*	X	X†	X	X	X
53QKB			X*	X†	X†	X		
38AN	X	X						
38HDC			X	X	X	X	X	X
40QNB	X	X	X	X				
40QAB			X**	X		X	X	X
40QKB				X		X		

*Uses an 024 size indoor unit.
†Uses an 036 size indoor unit.
**The 40QAB018 fan coil is a 40QAB024 fan coil with a different motor speed fan tap plug. Refer to unit Installation Instructions for more details.

NOTE: See Systems Index Index table, page 26 for a complete list of systems including components used for each.

ARI* capacities

SYSTEM MODEL NO. (includes voltage designation)†	FAN COIL TYPE	INDOOR SECTION (includes voltage designation)	OUTDOOR SECTION (includes voltage designation)	STANDARD CFM	NET COOLING (Btuh)	TOTAL kW	SEER	EER	OUTDOOR SOUND RATING (Decibels)
53QNB009-1	High Wall	40QNB009-1	38AN009-1	215	8,500	0.88	10.5	9.70	64
53QNB012-3	High Wall	40QNB012-3	38AN012-3	302	11,600	1.15	11.0	10.10	65
53QNB018-3	High Wall	40QNB018-3	38HDC018-3	480	17,300	1.66	11.3	10.40	70
53QNB024-3	High Wall	40QNB024-3	38HDC024-3	550	22,600	2.09	12.0	10.80	68
53QAB018-3	Ceiling Suspended	40QAB024-3	38HDC018-3	500	18,000	1.64	12.0	10.95	70
53QAB024-3	Ceiling Suspended	40QAB024-3	38HDC024-3	600	22,800	2.07	12.0	11.00	68
53QAB030-3	Ceiling Suspended	40QAB036-3	38HDC030-3**	840	30,000	2.73	12.0	11.00	68
53QAB036-3/5/6	Ceiling Suspended	40QAB036-3	38HDC036-3/5/6**	840	34,000	3.25	12.0	10.45	68
53QAB048-3/5/6	Ceiling Suspended	40QAB048-3	38HDC048-3/5/6	1200	47,000	4.37	12.0	10.75	72
53QAB060-3/5/6	Ceiling Suspended	40QAB060-3	38HDC060-3/5/6	1600	58,000	5.18	12.0	11.20	72
53QKB018-3	In-Ceiling Cassette	40QKB024-3	38HDC018-3	525	18,300	1.76	11.0	10.40	70
53QKB024-3	In-Ceiling Cassette	40QKB036-3	38HDC024-3	915	24,000	2.20	11.0	10.90	68
53QKB030-3	In-Ceiling Cassette	40QKB036-3	38HDC030-3**	915	30,000	3.13	10.8	9.60	68
53QKB036-3/5/6	In-Ceiling Cassette	40QKB036-3	38HDC036-3/5/6**	915	33,000	3.14	10.8	10.50	68

LEGEND

EER — Energy Efficiency Ratio
SEER — Seasonal Energy Efficiency Ratio

*Air Conditioning & Refrigeration Institute.
†Voltage is outdoor unit voltage.
**Liquid Line Solenoid Valve.

NOTES:
1. ARI rating condition is 80 F db, 67 F wb air entering evaporator and 95 F db air entering condenser.
2. Total kW is for total system, including compressor and outdoor and indoor fans.
3. Ratings are based on 25 ft of interconnecting refrigerant line.

ARI 210/240

ARI 270

(When used with matching unit.)

Accessories (field installed)

STANDARD FEATURES AND FIELD-INSTALLED ACCESSORIES

STANDARD FEATURE/FIELD-INSTALLED ACCESSORY	53QNB (High Wall)	53QAB (Ceiling Suspended)	53QKB (In-Ceiling Cassette)
Internal Condensate Pump	A	A	S
Mounting Brackets	S	S	S
Microprocessor Controls	S	—	—
24-V Electro-Mechanical Controls	—	S	S
Cleanable Filters	S	S	S
Charcoal Filter Kit	A	—	—
Programmable Electronic Thermostat	—	A	A
3-Speed Indoor-Fan Motor	S	S	S
Automatic Indoor-Fan Speed Control	S	S	S
Diagnostics	S	S	S
Galvanized Steel Casing (Indoor Unit)	—	—	S
Wired and Wireless Remote Controllers	S (WR)	S (W)	S (W)
Fully Insulated Indoor Unit Cabinet	S	S	S
Automatic Air Sweep	S	S	—
User-Controlled Air Distribution	—	—	S
Power Ventilation Kit	—	A	A
Fresh Air Intake Kit	—	A	A
Auto. Restart Function	S	S	S
Indoor Guard (Discharge Grille)	—	A	—
24-Hour Automatic Start/Stop Timer	S	A	A
50-ft 24 v Control Power Cable	—	S	—
35-ft 24 v Control Power Cable	S (018,024)	—	—
35-ft Power and Control Cable	S (009,012)	—	—
Refrigerant Line Turn Elbow*	—	S	—
High- and Low-Voltage Terminal Blocks (Indoor)	S	S	S
AccuRater® Refrigerant Metering Device	S†	S	S
Evaporator Coil Freeze Protection	S	S	S
Outdoor Low-Voltage Terminal Block	S	S	S
Crankcase Heater (Reciprocating Compressors)	S	S	S
Crankcase Heater (Scroll Compressor Units)**	A	A	A
High-Pressure Switch*	S	S	S
Low-Pressure Switch*	S	S	S
5-Year Compressor Warranty	S	S	S
Compressor Start Assistance (non-scroll units)*	S	S	S
Cycle-LOC™ Device*	S	S	S
Suction and Discharge Service Taps††	S	S	S
Totally Enclosed Fan Motor	S	S	S
Acoustically-Lined Compressor Compartment	S	S	S
Winter Start Control*	A	A	A
Low Ambient Temperature Controls (down to −20 F)	A	A	A
Compressor Time Guard® Cycle Protector	S	S	S
Liquid Solenoid Valve*	A	A	A
FIELD FABRICATED ACCESSORIES‖			
Snow Stand	A	A	A
Ice Stand*	A	A	A
Wind Baffles	A	A	A
Stacking Kit*	A	A	A
Condensing Unit Wall Mount Kit*	A	A	A

LEGEND

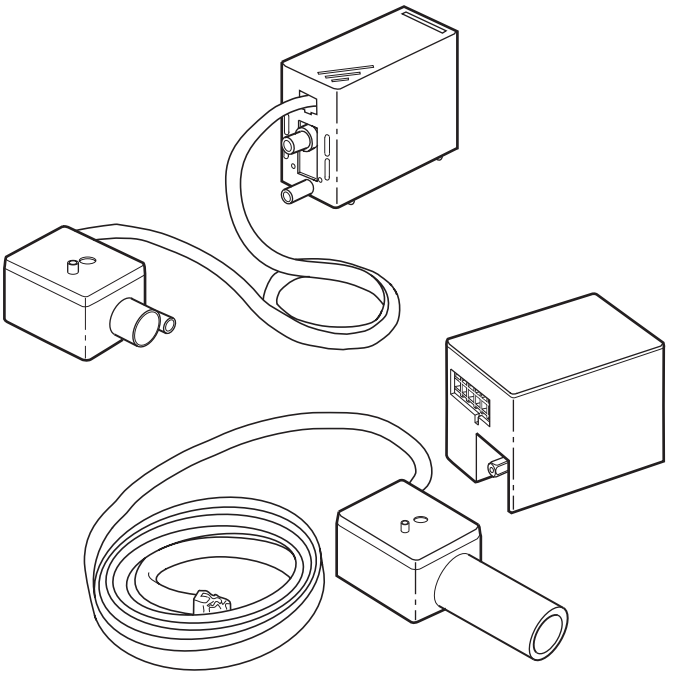
A — Field-Installed Accessory
S — Standard from the Factory
W — Wired (24 v)
WR — Wireless Remote
— — Not Available on this System

*For size 018 and larger.
†Capillary tubes are standard on 53QNB009 and 012 systems.
**Crankcase heaters are standard on 38HDC units without scroll compressors, and are recommended as an accessory for scroll compressor applications with line lengths over 100 ft and applications using low-ambient kits.
††The 38HDC units are equipped with 4 taps; one for each service valve, and one each on compressor suction and discharge.
‖Drawings available from Carrier representative.

Accessories (field installed) (cont)

See Standard Features and Field-Installed Accessories table on page 7 for information on system features and accessories.

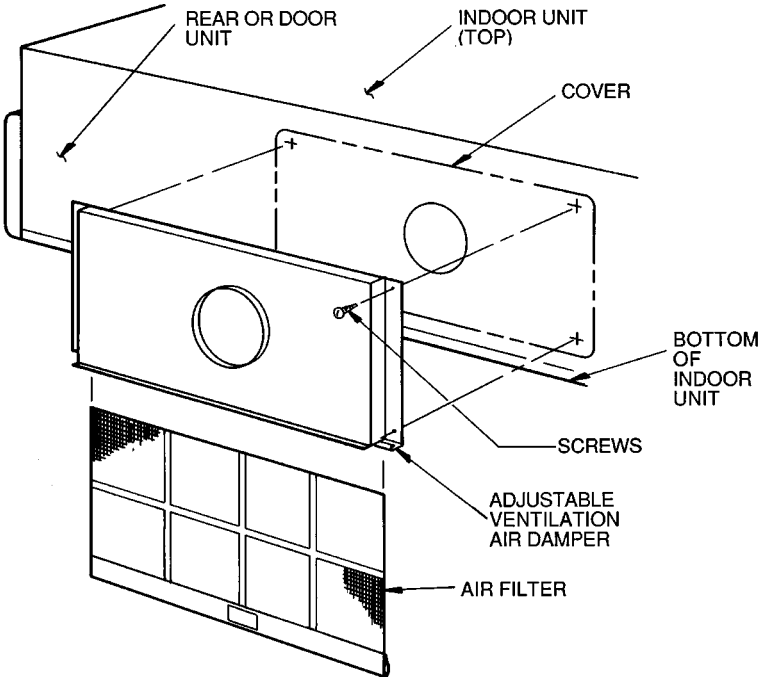
CONDENSATE PUMPS



Condensate pumps provide condensate lift capability of 20 in. on ceiling-suspended (40QAB) fan coils. On high wall fan coils, condensate pump has a lift capability of 1 to 10 ft (009 unit) or 3 to 25 ft (012-024 units). The pump mounts inside the unit with quick plug-in connections, and is recommended when adequate drain line pitch cannot be provided.

NOTE: This pump is standard on the in-ceiling cassette (40QKB) fan coils, where it provides a lift capability of 20 in. above the condensate pan.

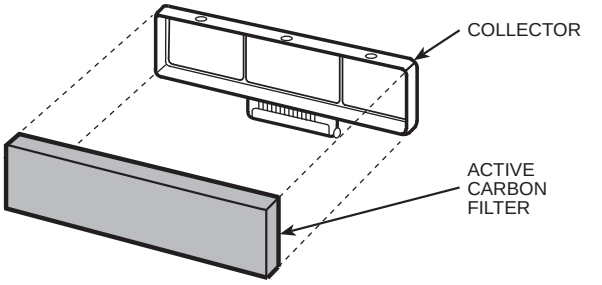
FRESH AIR INTAKE KIT



Fresh air intake kit provides for a variable amount (up to 30%) outdoor-air capability for the ceiling-suspended (40QAB) and cassette (40QKB) fan coils. The filter is mounted at the fan coil unit and provides filtering of outdoor air before it enters the unit. (Ceiling-suspended system application is shown.)

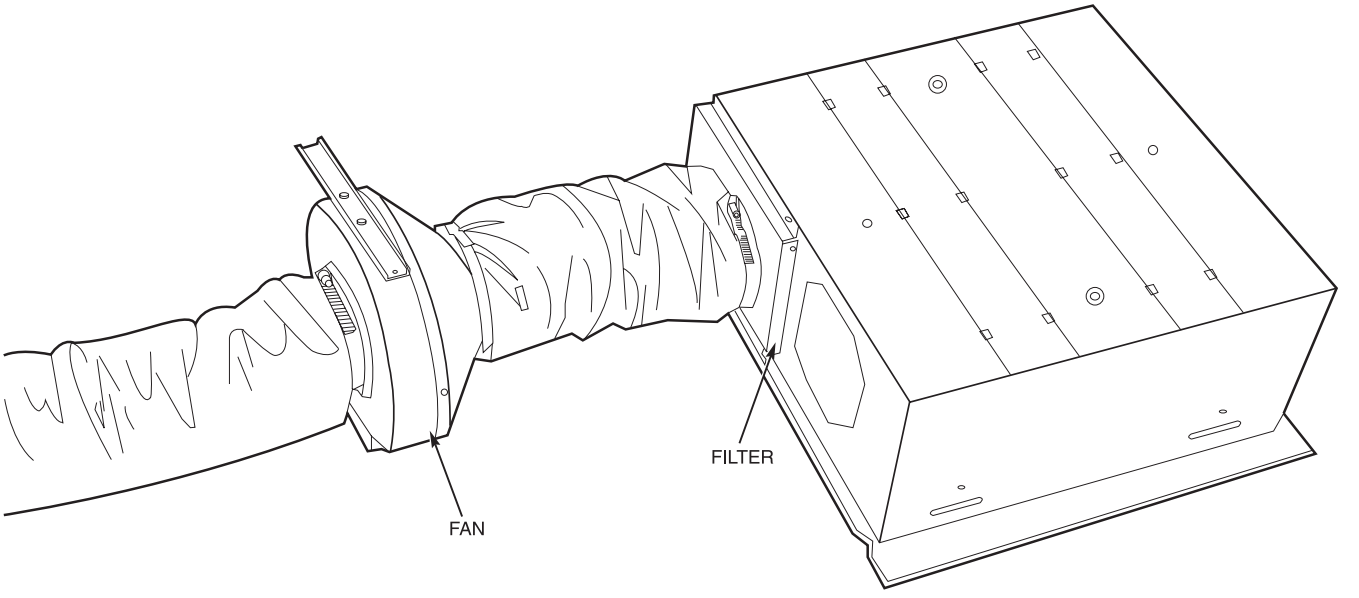
CHARCOAL FILTER KIT

The charcoal (carbon) filter kit is available for duct-free high wall fan coil units. This accessory improves indoor air quality by removing volatile organic compounds (VOCs), odors, and micro-particles from the air. The filter kit can be installed either before or after the unit has been mounted to the wall. Filters must be changed approximately every three months.



(FILTER FOR 009 SIZE SHOWN)

POWER VENTILATION KIT



Power ventilation kit provides for up to 10% outdoor air intake capability for the in-ceiling cassette (40QKB) units and up to 30% capability on ceiling-suspended (40QAB) units. The filter is mounted at the fan coil unit and filters the outdoor air. A booster fan with speed control is provided to allow for long duct runs and to balance airflow to the unit for consistent unit operation.

Accessories (field installed) (cont)

Condensing units

Low-ambient kit includes a solid-state head pressure controller designed to control condenser fan cycling, and is activated by a pressure sensor. It is specifically designed to control fan-motor cycles in response to saturated condensing pressure. This device maintains a constant saturated condensing temperature of 100 F ± 10 F at outdoor-air temperatures between 55 F and –20 F, and can be used on all 38AN and 38HDC condensing units without changing the condenser-fan motor.

Winter start control is an SPST delay relay. The control bypasses the low-pressure switch for approximately 3 minutes to permit start-up for cooling operation under low load conditions at low-ambient temperatures. This relay is recommended on all 38HDC systems that have the accessory low-ambient kit. Winter start control can also be used to provide low-ambient cooling at outdoor ambient temperatures between 55 F and 40 F.

Liquid solenoid valve is an electrically operated shutoff valve that is installed at the outdoor unit to stop and start refrigerant flow in response to compressor operation. The valve maintains a column of refrigerant in the liquid line between compressor operating cycles and is required for certain long-line applications and to improve system performance. The valve should be used with 38HDC030 and 036 units to achieve maximum efficiency and on all long-line applications (over 100 ft).

Crankcase heater is available for units with scroll compressors. Heater clamps onto compressor oil sump. Recommended for low-ambient applications.

Field fabricated accessories

Field fabricated accessories including the stacking kit, snow or ice stand, wind baffles, and wall mount brackets must be constructed in the field using field-supplied materials. For drawings, contact your Carrier representative.

Stacking rails allow stacking of equally-sized units or permit smaller units to be stacked on top of larger units. These field fabricated rails can be used for stacking all 38HDC018 and larger units.

Snow or ice stands raise the outdoor unit above snow and ice surfaces to permit normal air circulation, condensate drainage, and maintenance clearances in areas where prolonged subfreezing temperatures or heavy snowfalls occur. The snow rack/ice stand must be field fabricated and can be used on all 38HDC condensing units.

Wind baffle is a field fabricated sheet metal wrapper used to provide improved unit operation during high winds, and is recommended for 38HDC units whenever the low-ambient accessory is used.

Wall mount brackets are mounted to the outside of the structure to raise unit from ground level, or to mount the unit on a wall adjacent to a sloping roof. Wall mounts are also useful in areas of heavy snowfall or where space is at a premium. Wall mounts must be field fabricated and can be used with any 38HDC unit.

Fan coils

Indoor guard is a decorative wire guard for the ceiling-suspended (40QAB) fan coils. The guard mounts over the fan coil discharge to prevent objects from entering the unit and air sweep.

Electronic programable thermostats are available for in-ceiling cassette (40QKB) and ceiling-suspended (40QAB) fan coils. These commercial-grade thermostats provide 7-day, 4 event-per-day scheduling. The integral subbase provides 3-speed fan switchover capability, air sweep, auto changeover, and non-volatile memory (no battery required).

Physical data — 38AN condensing units*

UNIT 38AN	009	012
NOMINAL CAPACITY (Tons)	¾	1
OPERATING WEIGHT (lb)	55	62
REFRIGERANT TYPE	R-22	
Control (Cooling)	Capillary Tube	
Factory Charge (lb)	1.5	1.8
COMPRESSOR TYPE	Carrier Hermetic Rotary	
Model	EAA090111A	EBB120111A
Oil (Recharge) (oz)	10.1	10.1
Crankcase Heater	None	
Accumulator	Yes	
OUTDOOR FAN	Propeller, Direct Drive	
Rpm	850	850
Diameter (in.)...No. of Blades	12¼...4	12¼...4
Motor Watts	87	87
Nominal Air Cfm	750	750
OUTDOOR COIL	Copper Tube, Aluminum Fin	
Face Area (sq ft)...No. of Rows	3.5...1	3.5...2
Fins/in.	18	17
CONTROLS		
Fusible Plug (F)	210	210
Control Voltage	115	230
REFRIGERANT LINES		
Connection Type	Male Flare	
Liquid Line OD (in.)	¼	¼
Vapor Line OD (in.)	½	½
Maximum Length (ft)	35	35
Maximum Lift Fan Coil (Above Outdoor) (ft)	16	16
Maximum Lift Fan Coil (Below Outdoor) (ft)	30	30
EXTERNAL FINISH	Beige	

*These units may only be used with 40QNB009,012 fan coil units.

Physical data — 38HDC condensing units

UNIT 38HDC	018	024	030	036
NOMINAL CAPACITY (Tons)	1½	2	2½	3
OPERATING WEIGHT (lb)	150	154	169	179
REFRIGERANT TYPE	R-22			
Control (Cooling)	AccuRater® Piston at Fan Coil Unit			
Factory Charge (lb)*	3.6	4.8	5.2	5.4
COMPRESSOR TYPE	Tecumseh Reciprocating	Copeland Scroll		
Model	AW5517G	ZR23K1	ZR28K1	ZR34K3
Oil (Recharge) (oz)	30	25	25	38
Crankcase Heater (Watts)	19	None	None	None
Accumulator	Yes			
OUTDOOR FAN	Propeller, Direct Drive			
Rpm	850	850	850	850
Diameter (in.)...No. of Blades	18...3	18...3	18...3	18...3
Pitch (Degrees)	25	27	27	31
Motor Hp	⅛	⅛	⅛	⅛
Nominal Air Cfm	1720	1720	1720	1720
OUTDOOR COIL	Copper Tube, Aluminum Fin			
Face Area (sq ft)...No. of Rows	6.1...1.5	6.1...2	6.1...3	6.1...3
Fins/in.	15	15	15	15
CONTROLS				
High-Pressure (psig)				
Cut-in	320 ± 20			
Cutout	426 ± 7			
Low-Pressure (psig)				
Cut-in	22 ± 5			
Cutout	7 ± 3			
Fusible Plug	210 F			
Control Voltage†	24			
REFRIGERANT LINES				
Connection Type	Sweat			
Liquid Line OD (in.)	⅜	⅜	⅜	⅜
Vapor Line OD (in.)	⅝	⅝	¾	⅞**
Maximum Length (ft)	200	200	200	200
Maximum Lift Fan Coil (Above Outdoor) (ft)	65	65	65	65
Maximum Lift Fan Coil (Below Outdoor) (ft)	150	150	150	150
EXTERNAL FINISH	Alpine Mist (Beige)			

*See System Piston Guide and Refrigerant Charges table in Application section on page 48 for proper charge and piston with each fan coil type.
†24 v and a minimum of 40 va is provided in the fan coil unit.
**Valve connection size is ¾ inch. Recommended line size is ⅞ inch.

UNIT 38HDC	048	060
NOMINAL CAPACITY (Tons)	4	5
OPERATING WEIGHT (lb)	270	290
REFRIGERANT TYPE	R-22	
Control (Cooling)	AccuRater® Piston at Fan Coil Unit	
Factory Charge (lb)*	7.4	13.6
COMPRESSOR TYPE	Copeland Scroll	Carrier Scroll
Model	ZR49K3	SY60AC
Oil (Recharge) (oz)	53	52
Accumulator	Yes	
OUTDOOR FAN	Propeller, Direct Drive	
Rpm	850	850
Diameter (in.)...No. of Blades	24...3	24...3
Pitch (Degrees)	24	24
Motor Hp	¼	¼
Nominal Air Cfm	3900	3900
OUTDOOR COIL	Copper Tube, Aluminum Fin	
Face Area (sq ft)...No. of Rows	12.3...2	12.3...3
Fins/in.	15	15
CONTROLS		
Cut-in	320 ± 20	
Cutout	426 ± 7	
Low-Pressure (psig)		
Cut-in	22 ± 5	
Cutout	7 ± 3	
Fusible Plug	210 F	
Control Voltage†	24	
REFRIGERANT LINES		
Connection Type	Sweat	
Liquid Line OD (in.)	⅜	⅜
Vapor Line OD (in.)	⅞	1⅛**
Maximum Length (ft)	200	200
Maximum Lift Fan Coil (Above Outdoor) (ft)	65	65
Maximum Lift Fan Coil (Below Outdoor) (ft)	150	150
EXTERNAL FINISH	Alpine Mist (Beige)	

*See System Piston Guide and Refrigerant Charges table in Application section on page 48 for proper charge with each fan coil type.
†24 v and a minimum of 40 va is provided in the fan coil unit.
**Valve connection size is ⅞ inch. Recommended line size is 1⅛ inch.

Physical data — high wall units

UNIT 40QNB	009*	012*
NOMINAL CAPACITY (Tons)	¾	1
NOMINAL SIZE (Btuh)	9000	12,000
OPERATING WEIGHT (lb)	18.7	24.2
MOISTURE REMOVAL RATE (Pints/Hr)	2.4	3.4
FINISH	White	
REFRIGERANT	R-22	
Control (Cooling)	Capillary Tube in Outdoor Unit	
Factory or System Charge (lb)†	1.5	1.8
INDOOR FAN	Direct Drive Centrifugal	
Rpm...Cfm High	1200...240	1040...260
Rpm...Cfm Medium	1100...210	940...240
Rpm...Cfm Low	1000...180	850...210
Motor Watts	34	35
Blowers — No. ...Size (in.)	1...3.54 x 27.75	1...3.94 x 27.75
INDOOR COIL	Copper Tube, Aluminum Fin	
Face Area (sq ft)	1.45	1.6
No. of Rows	2	2
Fins/in.	18	17
Circuits	2	3
FILTERS	Cleanable	
(Quantity) Size (in.)	(2) 9 x 12	(2) 9½ x 13¾
AIRSWEEP		
Horizontal	Manual	
Vertical	Automatic	
CONTROLS	Integrated Microprocessor	
Remote Controller	Wireless	
Freeze Protection	Yes	
Auto. Restart	Yes	
Diagnostics	Yes	
Timer Mode	24-Hour Startup/Shutdown Type	
Test Mode	Yes	
Dehumidification Mode	Yes	
Fan Mode	High/Medium/Low/Auto.	
Control Voltage	115 v	230 v
REFRIGERANT LINES		
Connection Type	Male Flare	
Liquid LIne OD (in.)	¼	¼
Vapor Line OD (in.)	½	½
Maximum Length (ft)	35	35
Maximum Lift Fan Coil (Above Outdoor) (ft)	16	16
Maximum Lift Fan Coil (Below Outdoor) (ft)	30	30
CONDENSATE DRAIN CONNECTION (in.)	⅝ OD, 7⁄16 ID	

*Units may only be matched with 38AN outdoor units.
†Full factory charge shipped in outdoor unit. Charge is determined based on 25 ft of line.

UNIT 40QNB	018*	024*
NOMINAL CAPACITY (Tons)	1½	2
NOMINAL SIZE (Btuh)	18,000	24,000
OPERATING WEIGHT (lb)	38.5	42.9
MOISTURE REMOVAL RATE (Pints/Hr)	5.6	6.3
FINISH	White	
REFRIGERANT	R-22	
Control (Cooling)	AccuRater® Metering Device	
System Charge Required (lb)†	4.6	5.3
INDOOR FAN	Direct Drive Centrifugal	
Rpm...Cfm High	1120...550	1470...570
Rpm...Cfm Medium	1050...500	1370...466
Rpm...Cfm Low	950...450	1270...417
Motor Watts	44	49
Blowers — No. ...Size (in.)	2...3.94 x 17.8	2...3.94 x 17.8
INDOOR COIL	Copper Tube, Aluminum Fin	
Face Area (sq ft)	2.56	2.56
No. of Rows	2	3
Fins/in.	15.9	18.1
Circuits	2	3
FILTERS	Cleanable	
(Quantity) Size (in.)	(3) 11½ x 17¾	
AIRSWEEP		
Horizontal	Manual	
Vertical	Automatic	
CONTROLS	Integrated Microprocessor	
Remote Controller	Wireless	
Freeze Protection	Yes	
Auto. Restart	Yes	
Diagnostics	Yes	
Timer Mode	24-Hour Startup/Shutdown Type	
Test Mode	Yes	
Dehumidification Mode	Yes	
Fan Mode	High/Medium/Low/Auto.	
Control Voltage	24 v	
REFRIGERANT LINES		
Connection Type	Male Flare	
Liquid Line OD (in.)	⅜	⅜
Vapor Line OD (in.)	⅝	⅝
Maximum Length (ft)	200	200
Maximum Lift Fan Coil (Above Outdoor) (ft)	65	65
Maximum Lift Fan Coil (Below Outdoor) (ft)	150	150
CONDENSATE DRAIN CONNECTION (in.)	⅝ OD, 7/16 ID	

*Units may only be matched with 38HDC outdoor units.
†Full factory charge shipped in outdoor unit. Charge shown is for smallest system combination and is determined based on 25 ft of line. See Application Data section on page 48 for information on longer line lengths and condensing unit combinations.

Physical data — ceiling-suspended units

UNIT 40QAB	018*	024	036	048	060
NOMINAL CAPACITY (Tons)	1½	2	3	4	5
NOMINAL SIZE (Btuh)	18,000	24,000	36,000	36,000	60,000
OPERATING WEIGHT (lb)	108	108	117	149	179
MOISTURE REMOVAL RATE (Pints/Hr)	5.8	7.1	9.5	13.4	15.1
FINISH	GM Motorhome White with Black Trim				
REFRIGERANT	R-22				
Control (Cooling)	AccuRater® Piston in Fan Coil				
System Charge Required (lb)	3.7	5.5	5.4	7.4	13.6
INDOOR FAN	Direct Drive Centrifugal				
Rpm...Cfm High	862...500	1050...600	1275...840	1435...1200	1275...1600
Rpm...Cfm Medium	690...400	690...400	972...740	1388...1160	972...1220
Rpm...Cfm Low	552...320	552...320	830...640	1315...1100	830...1040
High Speed Watts	92	92	282	425	564
Quantity...Motor Hp	1...1/16	1...1/16	1...1/6	1...1/6	2...1/6
	—	—	—	1...1/16	—
Blowers — No. ...Size (in.)	2...6 x 8	2...6 x 8	2...6 x 8	3...6 x 8	4...6 x 8
INDOOR COIL	Copper Tube, Aluminum Fin				
Face Area (sq ft)	2.2	2.2	2.6	3.0	4.0
No. of Rows	4	4	4	4	4
Fins/in.	14.9	14.9	14.9	14.9	14.9
Circuits	4	4	4	8	8
FILTERS	Cleanable				
(Quantity) Size (in.)	(4) 12 x 8¾		(5) 10⅝ x 8¾	(4) 10⅝ x 8¾ (2) 12 x 8¾	(6) 12 x 8¾
AIRSWEEP					
Horizontal	—				
Vertical	Automatic				
CONTROLS	Solid-State Electromechanical				
Remote Controller	Hard-Wired				
Auto. Restart	Yes				
Diagnostics	Yes				
Timer Mode	24-Hour Type				
Test Mode	Yes				
Fan Mode	High/Medium/Low/Auto.				
Control Voltage	24 v				
REFRIGERANT LINES					
Connection Type	Flare				
Liquid Line OD (in.)	3/8				
Vapor Line OD (in.)	5/8	5/8	¾	¾	¾
Maximum Length (ft)	200				
Maximum Lift Fan Coil (Above Outdoor) (ft)	65				
Maximum Lift Fan Coil (Below Outdoor) (ft)	150				
CONDENSATE DRAIN CONNECTION (in. MPT)	¾**				

*The 40QAB018 fan coil is a 40QAB024 fan coil, but uses a different motor speed fan tap plug than the 40QAB024. Refer to unit installation instructions for more details.

†Condensing (outdoor) unit is shipped with a full charge. The amount of charge shown is for smallest system combination and is determined based on 15 ft of line. See Application Data section on page 48 for information on longer line lengths and condensing unit combinations.

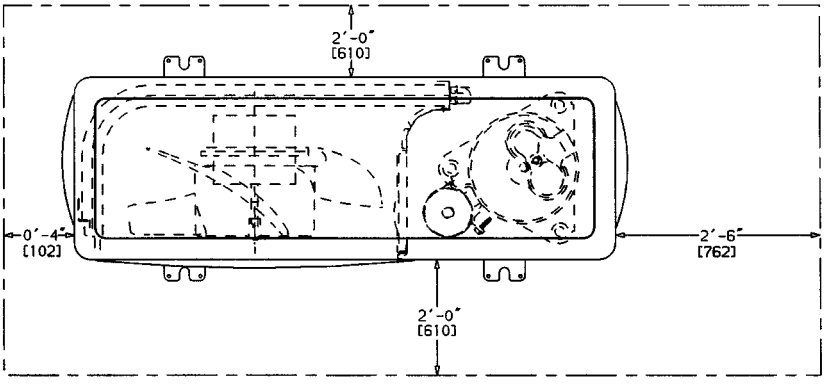
**Flexible tubing (⅝ in.) required when optional condensate pump is used.

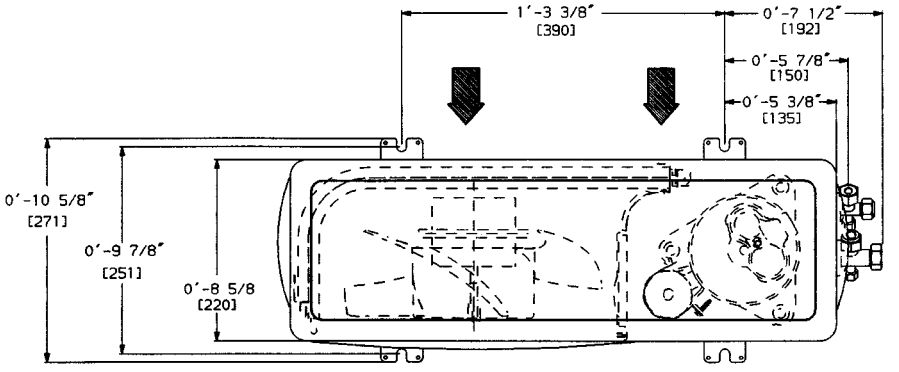
Physical data — in-ceiling cassette units

UNIT 40QKB	024	036
NOMINAL CAPACITY (Tons)	1½	3
NOMINAL SIZE (Btuh)	18,000	36,000
OPERATING WEIGHT (lb)	61.6	105.8
MOISTURE REMOVAL RATE (Pints/Hr)	7.0	9.6
FINISH	Ceiling White with Black Discharge Grille	
REFRIGERANT	R-22	
Control (Cooling)	AccuRater® Metering Device	
System Charge Required (lb)*	4.8	6.0
INDOOR FAN	Direct Drive Centrifugal	
Rpm...Cfm High	1190...525	970...915
Rpm...Cfm Medium	930...415	790...745
Rpm...Cfm Low	840...375	635...635
High Speed Watts	100	180
Motor (Quantity) Hp	(1) 1/16	(2) 1/16
Blowers — No. ...Size (in.)	1...10 x 8	2...10 x 8
INDOOR COIL	Copper Tube, Aluminum Fin	
Face Area (sq ft)	2.66	5.67
No. of Rows	3	2
Fins/in.	14.0	14.0
Circuits	4	4
FILTERS	Cleanable	
(Quantity) Size (in.)	(1) 16½ x 16½	(2) 16½ x 16½
AIRSWEEP	None	
CONTROLS	Solid-State Electromechanical	
Remote Controller	Hard Wired	
Auto. Restart	Yes	
Diagnostics	Yes	
Timer Mode	24-Hour Countdown Type	
Test Mode	Yes	
Fan Mode	High/Medium/Low/—/Auto/Continuous	
Control Voltage	24 v (provided)	
REFRIGERANT LINES		
Connection Type	Flare	
Liquid Line OD (in.)	3/8	
Vapor Line OD (in.)	5/8	3/4
Maximum Length (ft)	200	
Maximum Lift Fan Coil (Above Outdoor) (ft)	65	
Maximum Lift Fan Coil (Below Outdoor) (ft)	150	
CONDENSATE DRAIN CONNECTION	Hose	
CONDENSATE DRAIN SIZE (in.)	1.0	

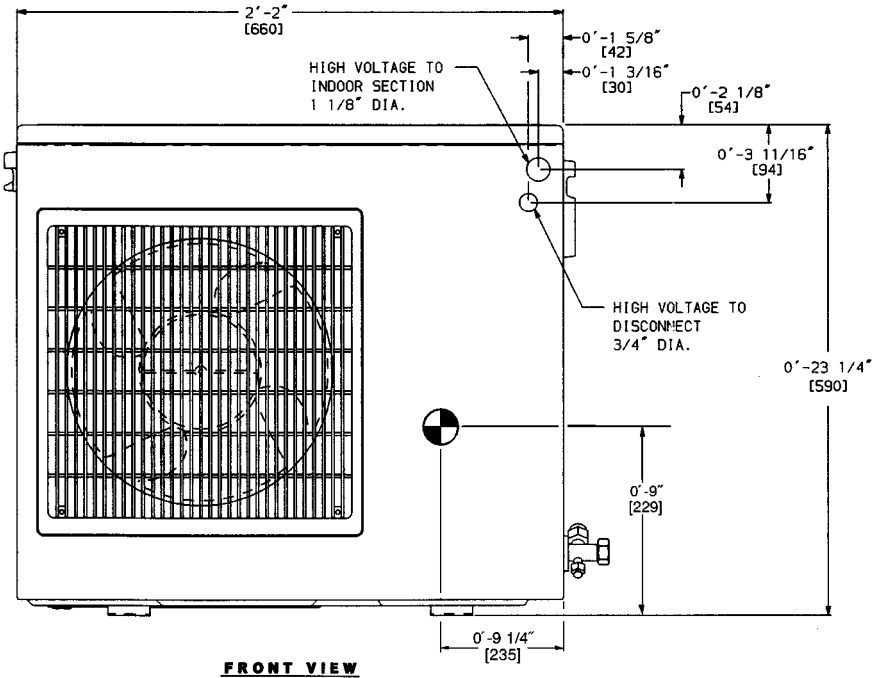
*The condensing (outdoor) unit is shipped with a full charge. The amount of charge shown is for smallest system combination and is determined based on 15 ft of line. See Application Data section on page 48 for information on longer line lengths and condensing unit combinations.

Base unit dimensions — 38AN009,012 outdoor units

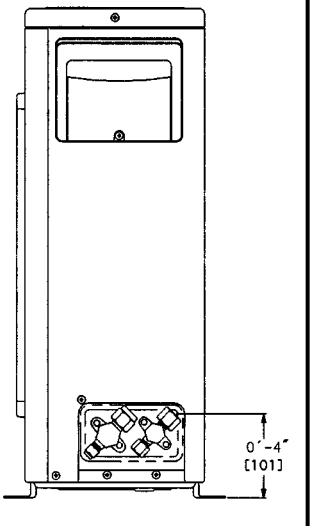




TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

1. Dimensions in [ ] are in millimeters.
2. Direction of airflow.
3. Center of Gravity.
4. Minimum clearances: 4 in. on coil sides, 24 in. on fan side, and 30 in. on service side.

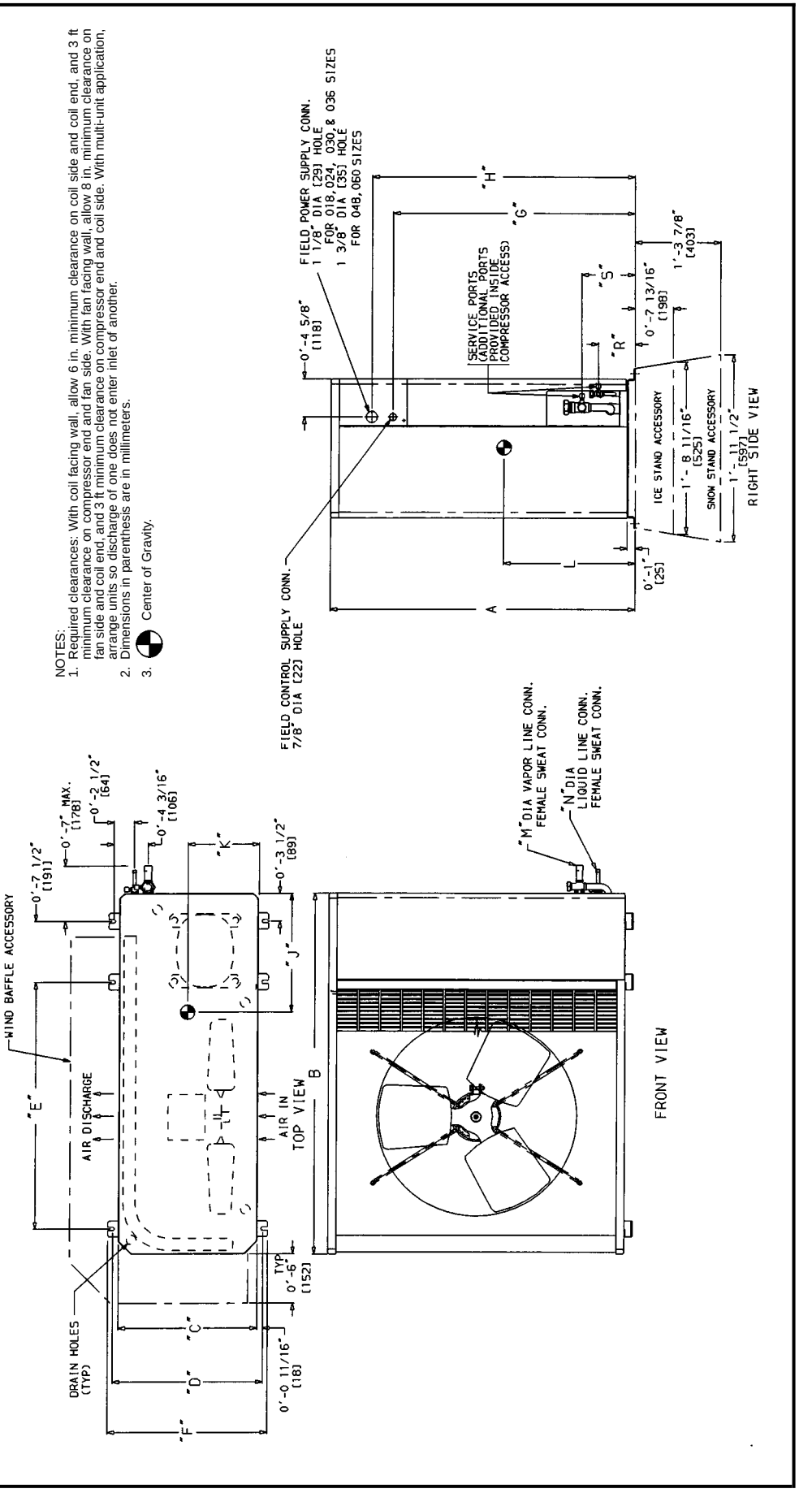
UNIT 38AN	WEIGHT	
	Lb	Kg
009	55.0	25.0
012	62.0	28.1

Base unit dimensions — 38HDC condensing units

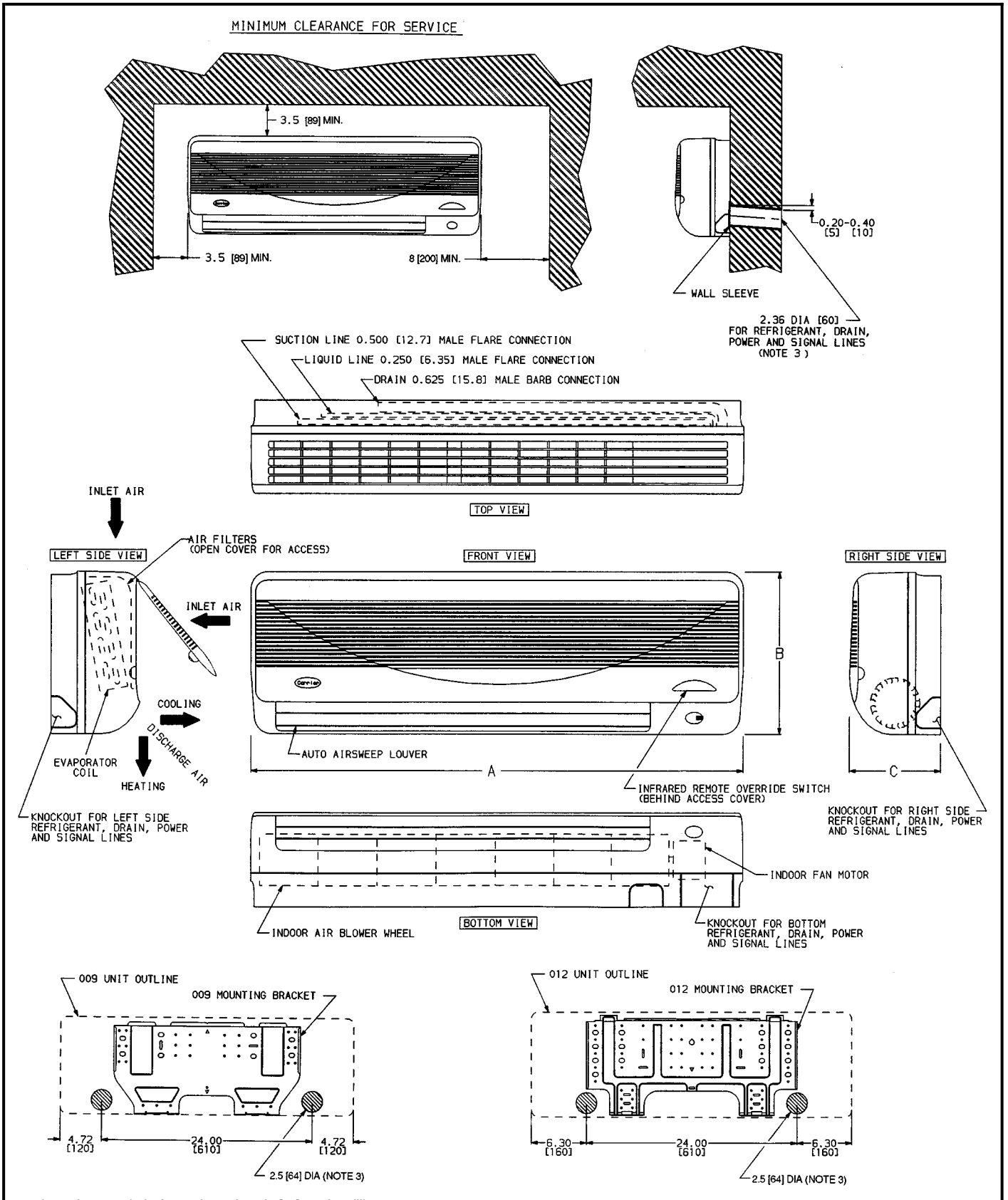
UNIT 38HDC	A		B		C		D		E		F		G		H		J		K		L		M		N		R		S		OPERATING WT	
	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	Lb	kg
018	2-1⅛	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 9/16	436.6	1-5½	444.5	1-8⅛	511.2	1-1¼	336.6	0-6⅝	168.3	0-10 13/16	274.6	0-0⅝	15.00	0-0⅜	9.52	0-4½	115.0	0-6½	166.0	150	68.0
024	2-1⅛	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 9/16	436.6	1-5½	444.5	1-8⅛	511.2	1-2 7/16	366.7	0-6¾	171.4	1- 0	304.8	0-0⅝	15.00	0-0⅜	9.52	0-4½	115.0	0-6½	166.0	154	69.0
030	2-1⅛	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 9/16	436.6	1-5½	444.5	1-8⅛	511.2	1-1	330.2	0-6¾	171.4	0-11⅝	295.3	0-0¾	19.05	0-0⅜	9.52	0-4½	115.0	0-6½	166.0	169	76.6
036	2-1⅛	638.2	3-0 15/16	938.2	1-2 9/16	369.9	1-4	406.4	1-11 7/16	595.3	1-5 9/16	436.6	1-5½	444.5	1-8⅛	511.2	1-0 11/16	322.3	0-6¾	171.4	0-11⅞	301.6	0-0⅞	22.22	0-0⅜	9.52	0-4½	115.0	0-6½	166.0	179	81.2
048	3-1 3/16	944.6	3-8 9/16	1131.9	1-5 1/16	433.4	1-6 7/16	468.3	2- 6½	774.7	1-7⅝	498.5	2-5⅝	752.5	2-8 9/16	817.6	1-1 11/16	347.7	0-8⅛	206.4	1- 4⅛	409.6	0-0⅞	22.22	0-0⅜	9.52	0-4½	115.0	0-6½	166.0	270	122.4
060	3-1 3/16	944.6	3-8 9/16	1131.9	1-5 1/16	433.4	1-6 7/16	468.3	2- 6½	774.7	1-7⅝	498.5	2-5⅝	752.5	2-8 9/16	817.6	1-2¼	361.9	0-8⅛	206.4	1- 4½	419.1	0-0⅞	22.22	0-0⅜	9.52	0-4½	115.0	0-6½	166.0	290	131.5

UNIT 38HDC	MINIMUM MOUNTING PAD DIMENSIONS					
	Support Feet		Snow Stand		Ice Stand	
	ft-in.	mm	ft-in.	mm	ft-in.	mm
018,024,030,036	1-11 x 3-6	584.2 x 1066.8	2-2 x 3-6	660.4 x 1066.8	2-2 x 3-6	660.4 x 1066.8
048,060	2-0 x 4-2	609.6 x 1270	2-4 x 4-4	711.2 x 1270.0	2-3 x 4-2	660.4 x 1270.0

NOTES:
1. Required clearances: With coil facing wall, allow 6 in. minimum clearance on coil side and coil end, and 3 ft minimum clearance on compressor end and fan side. With fan facing wall, allow 8 in. minimum clearance on fan side and coil end, and 3 ft minimum clearance on compressor end and coil side. With multi-unit application, arrange units so discharge of one does not enter inlet of another.
2. Dimensions in parenthesis are in millimeters.
3. Center of Gravity.


WIND BAFFLE ACCESSORY
AIR DISCHARGE
DRAIN HOLES (TYP)
TOP VIEW
AIR IN
TYP
FRONT VIEW
FIELD CONTROL SUPPLY CONN. 7/8" DIA [22] HOLE
FIELD POWER SUPPLY CONN. 1 1/8" DIA [29] HOLE FOR 018,024, 030 & 036 SIZES 1 3/8" DIA [35] HOLE FOR 048,060 SIZES
SERVICE PORTS (ADDITIONAL PORTS PROVIDED INSIDE COMPRESSOR ACCESS)
ICE STAND ACCESSORY
SNOW STAND ACCESSORY
"M" DIA VAPOR LINE CONN. FEMALE SWEAT CONN.
"N" DIA LIQUID LINE CONN. FEMALE SWEAT CONN.
RIGHT SIDE VIEW

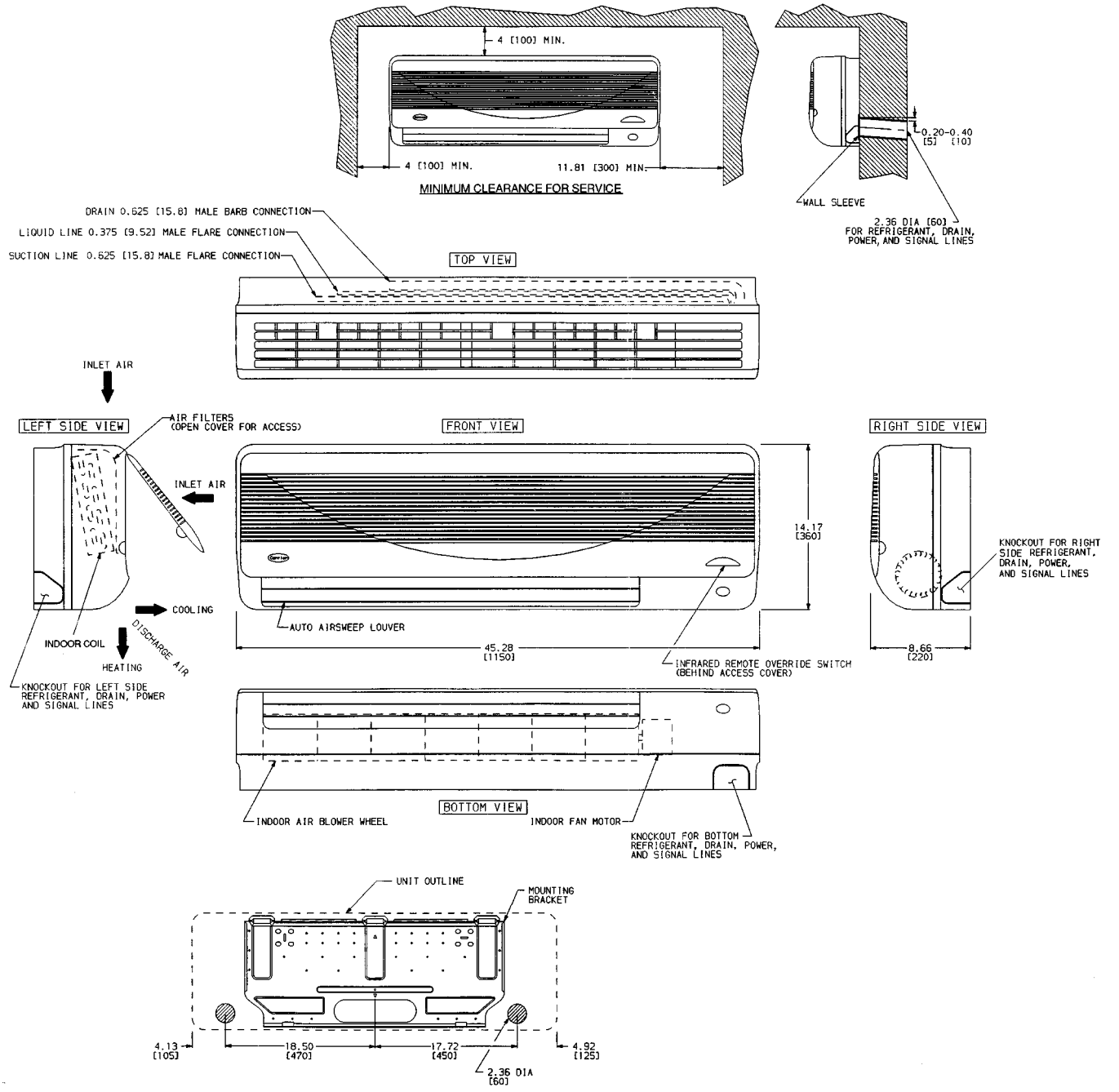
Base unit dimensions — 40QNB009,012 high wall fan coil units



1. Dimensions are in inches. Dimensions in [ ] are in millimeters.
2. ➡ Direction of airflow.
3. Refrigerant, drain, and power connections may be made rear, left side or right side.
4. Refrigerant is metered by capillary tubes in the outdoor unit. Insulate both refrigerant lines.
5. Clearances of 3½″ on top of and to the left of the fan coil unit are absolute minimums. Clearances of 10″ are recommended.

UNIT 40QNB	WEIGHT		A		B		C	
	Lb	Kg	in.	mm	in.	mm	in.	mm
009	18.7	8.5	33.46	850	11.02	280	6.29	160
012	24.2	11.0	36.61	930	11.81	300	7.28	185

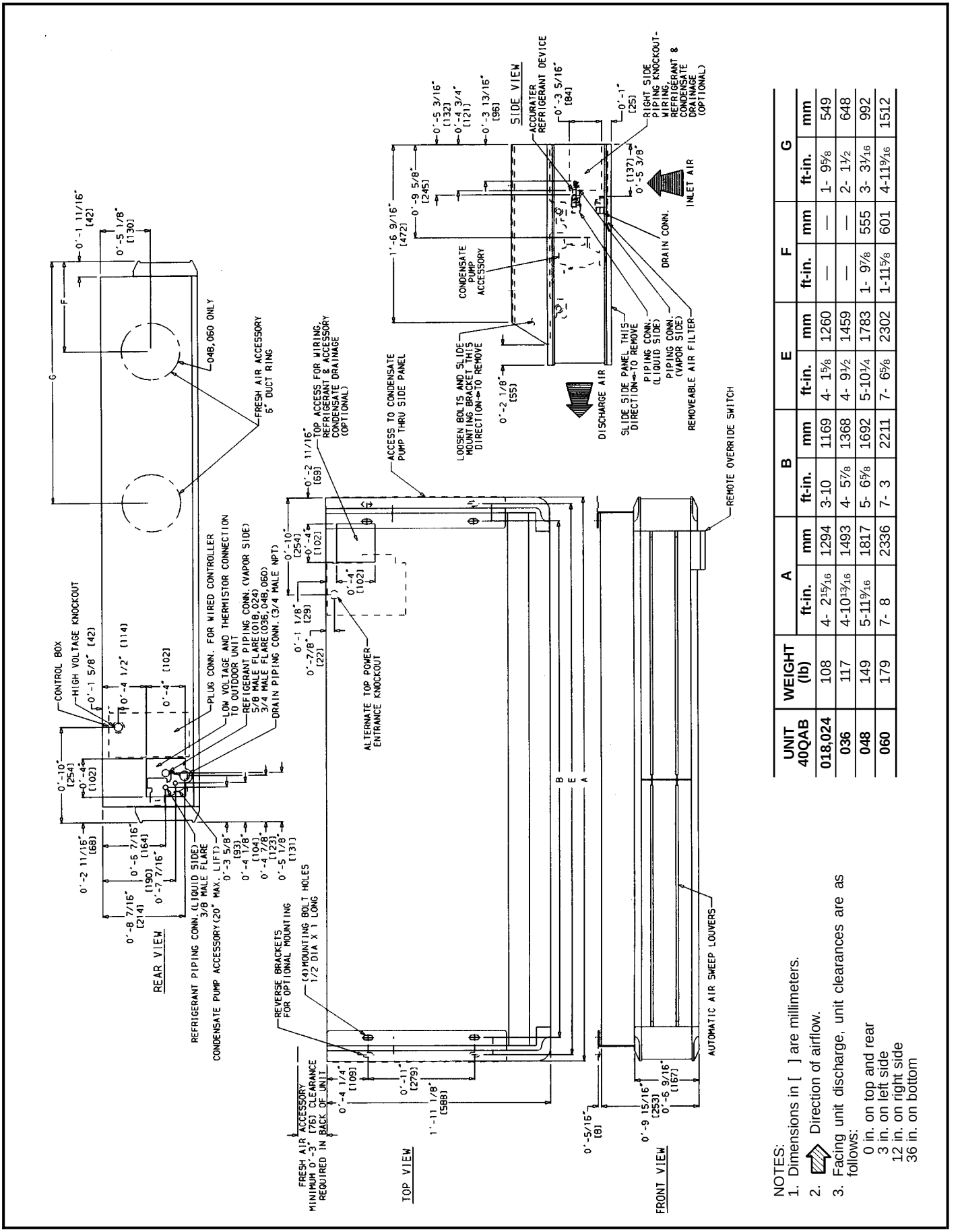
Base unit dimensions — 40QNB018,024 high wall fan coil units



1. Dimensions in ( ) are in millimeters.
2. ➡ Direction of airflow.
3. Refrigerant, drain, and power connections may be made in unit rear, bottom, left side, or right side.
4. Refrigerant is metered by AccuRater® device at the fan coil unit on 38HDC applications.
5. The 4″ top and left side clearances are absolute minimums. Clearances of 10″ are recommended.

UNIT 40QNB	WEIGHT — LB (KG)
018	38.5 (17.5)
024	42.9 (19.5)

Base unit dimensions — 40QAB ceiling-suspended fan coil units


REAR VIEW
TOP VIEW
FRONT VIEW
SIDE VIEW
CONTROL BOX
HIGH VOLTAGE KNOCKOUT
PLUG CONN. FOR WIRED CONTROLLER
LOW VOLTAGE AND THERMISTOR CONNECTION TO OUTDOOR UNIT
REFRIGERANT PIPING CONN. (VAPOR SIDE) 5/8 MALE FLARE (018, 024) 3/4 MALE FLARE (036, 048, 060)
DRAIN PIPING CONN. (3/4 MALE NPT)
048, 060 ONLY
FRESH AIR ACCESSORY 6" DUCT RING
REFRIGERANT PIPING CONN. (LIQUID SIDE) 3/8 MALE FLARE
CONDENSATE PUMP ACCESSORY (20" MAX. LIFT)
REVERSE BRACKETS FOR OPTIONAL MOUNTING
(4) MOUNTING BOLT HOLES 1/2 DIA X 1 LONG
FRESH AIR ACCESSORY MINIMUM 0'-3" (76) CLEARANCE REQUIRED IN BACK OF UNIT
ALTERNATE TOP POWER ENTRANCE KNOCKOUT
TOP ACCESS FOR WIRING, REFRIGERANT & ACCESSORY CONDENSATE DRAINAGE (OPTIONAL)
ACCESS TO CONDENSATE PUMP THRU SIDE PANEL
LOOSEN BOLTS AND SLIDE MOUNTING BRACKET THIS DIRECTION ⇔ TO REMOVE
CONDENSATE PUMP ACCESSORY
ACCURATER REFRIGERANT DEVICE
SLIDE SIDE PANEL THIS DIRECTION ⇔ TO REMOVE
PIPING CONN. (LIQUID SIDE)
PIPING CONN. (VAPOR SIDE)
DRAIN CONN.
RIGHT SIDE PIPING KNOCKOUT-WIRING, REFRIGERANT & CONDENSATE DRAINAGE (OPTIONAL)
INLET AIR
DISCHARGE AIR
REMOVEABLE AIR FILTER
REMOTE OVERRIDE SWITCH
AUTOMATIC AIR SWEEP LOUVERS

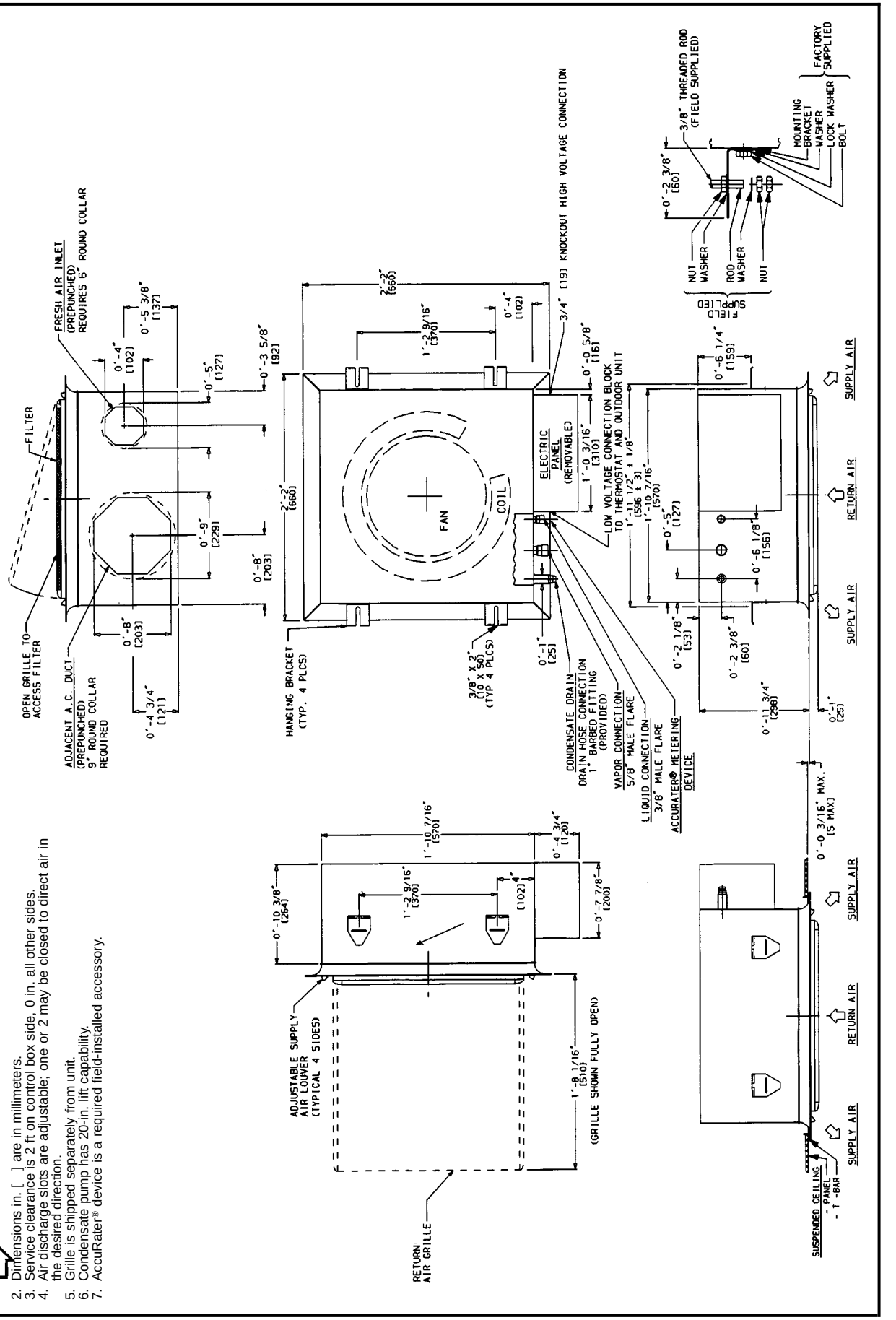
UNIT 40QAB	WEIGHT (lb)	A		B		E		F		G	
		ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm
018,024	108	4- 2 15/16	1294	3-10	1169	4- 1 5/8	1260	—	—	1- 9 5/8	549
036	117	4-10 3/16	1493	4- 5 7/8	1368	4- 9 1/2	1459	—	—	2- 1 1/2	648
048	149	5-11 9/16	1817	5- 6 5/8	1692	5-10 1/4	1783	1- 9 7/8	555	3- 3 1/16	992
060	179	7- 8	2336	7- 3	2211	7- 6 5/8	2302	1-11 5/8	601	4-11 9/16	1512

NOTES:
1. Dimensions in [ ] are millimeters.
2. Direction of airflow.
3. Facing unit discharge, unit clearances are as follows:
   - 0 in. on top and rear
   - 3 in. on left side
   - 12 in. on right side
   - 36 in. on bottom

Base unit dimensions — 40QKB in-ceiling cassette fan coil units

UNIT 40QKB	OPERATING WEIGHT	
	Lb	Kg
024	61.6	28

NOTES:
1. ⇧ indicates airflow.
2. Dimensions in. [ ] are in millimeters.
3. Service clearance is 2 ft on control box side, 0 in. all other sides.
4. Air discharge slots are adjustable; one or 2 may be closed to direct air in the desired direction.
5. Grille is shipped separately from unit.
6. Condensate pump has 20-in. lift capability.
7. AccuRater® device is a required field-installed accessory.

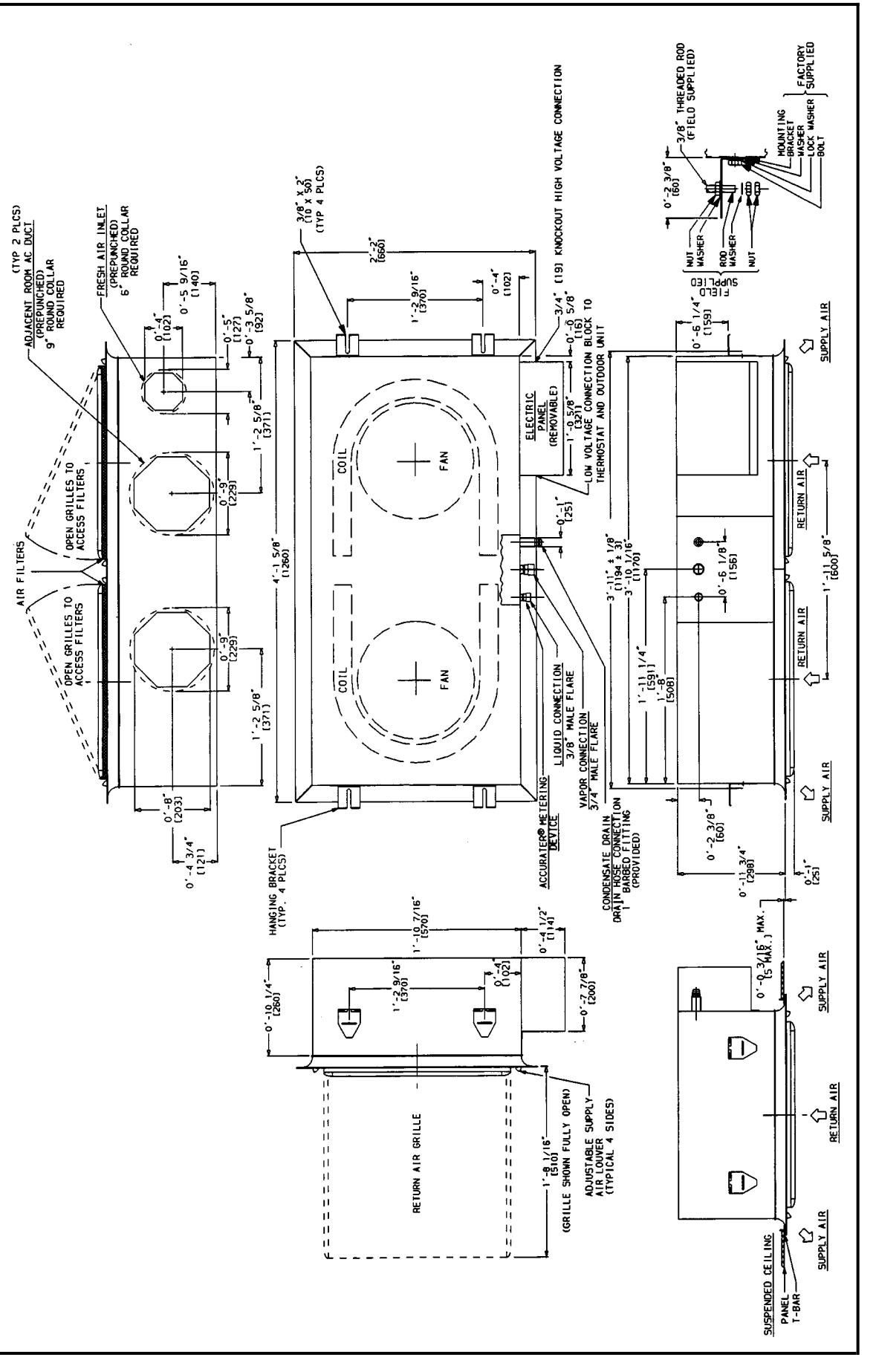


Base unit dimensions — 40QKB in-ceiling cassette fan coil units (cont)

UNIT 40QKB	OPERATING WEIGHT	
	Lb	Kg
036	105.8	48

NOTES:

1. Indicates airflow.
2. Dimensions in [ ] are in millimeters.
3. Service clearance is 2 ft on control box side, 0 in. all other sides.
4. Air discharge slots are adjustable; one or 2 may be closed to direct air in the desired direction.
5. Grille is shipped separately from unit.
6. Condensate pump has 20-in. lift capability.
7. AccuRater® device is a required field-installed accessory.



Selection procedure (with example)

I Determine the type of fan coil which best suits the application (refer to Systems Index table on page 26).

Duct-free split systems have 3 types of fan coils with overlapping capacities to choose from. Select the system type which best meets the job conditions. This example uses a 2-ton ceiling-suspended fan coil (assume wall space is not available for a wall-mounted unit).

II Determine cooling load requirements at design conditions.

Required Load Conditions:

Required cooling capacity (TCG) ..... 23,500 Btuh
Sensible Heat Capacity (SHC) ..... 16,000 Btuh
Temperature Air Entering
Condensing Unit ..... 95 F
Temperature Air Entering
Indoor Unit (EAT.) ..... 82 F db/68 F wb

db — dry bulb
wb — wet bulb

III Select system that satisfies load requirements.

Enter the Systems Index table on page 26 at ceiling-suspended system for 24,000 Btuh, and select the system that best approximates cooling requirements. System index no. 6 with a nominal net capacity of 22,800 Btuh cooling is the system selected. The system consists of a 38HDC024 outdoor unit matched with one 40QAB024 indoor unit.

IV Determine if system selected satisfies cooling requirements.

Enter Cooling Capacities table on page 32 at high speed and 95 F outdoor entering air temperature (EAT, air entering condenser). By interpolation, at 68 F EAT, the system gross capacity is 23,680 Btuh cooling [(25,200 – 23,300) x (1/5) + 23,300], and 14,980 Btuh SHG (gross sensible capacity). Adjust the SHG in accordance with Note 2 of the Combinations Ratings table, using the correction factor for an 82 F EWB (entering air wet bulb), and a .04 BF (bypass factor). The result is an adjusted SHG of 16,141 Btuh. The total gross cooling capacity of 23,680 Btuh and the sensible capacity of 16,141 Btuh satisfy stipulated load requirements.

V Determine net cooling capacity and system energy efficiency ratio.

Determine net cooling capacity (refer to Cooling Capacity table for System 6 on page 32). Net total cooling capacity must be interpolated as follows:

(24,700 - 22,800) x (1/5) + 22,800 = 23,180 Btuh

To determine the energy efficiency ratio (EER), system kW must be interpolated from the Cooling Capacity table for System 6 in the same manner:

(2.09 - 2.07) x (1/5) + 2.07 = 2.07 kW

Then calculate EER:

$$EER = \frac{\text{Net Cooling Capacity}}{\text{kW x 1000}}$$

$$\frac{23{,}180}{2.07 \text{ x } 1000} = 11.2 \text{ EER}$$

NOTE: The SEER (Seasonal Energy Efficiency Ratio) CANNOT be calculated for this system. SEERs can only be found as a direct result of testing at specified ARI conditions. See ARI Capacities table on page 6.

VI Determine the recommended liquid and vapor line sizes.

Refer to Refrigerant Line Sizing section on page 47.

NOTE: With long-lines applications, it may be necessary to adjust cooling capacity. See Long-Lines Applications section on page 48 for more details.

Performance data

SYSTEMS INDEX TABLE

SYSTEM MODEL NO.	FAN COIL TYPE	INDOOR SECTION	OUTDOOR SECTION	NET COOLING (Btuh)*	INDEX NO.
53QNB009	High Wall	40QNB009	38AN009	8,500	1
53QNB012	High Wall	40QNB012	38AN012	11,600	2
53QNB018	High Wall	40QNB018	38HDC018	17,300	3
53QNB024	High Wall	40QNB024	38HDC024	22,600	4
53QAB018	Ceiling Suspended	40QAB024†	38HDC018	18,000	5
53QAB024	Ceiling Suspended	40QAB024	38HDC024	22,800	6
53QAB030	Ceiling Suspended	40QAB036	38HDC030	30,000	7
53QAB036	Ceiling Suspended	40QAB036	38HDC036	34,000	8
53QAB048	Ceiling Suspended	40QAB048	38HDC048	47,000	9
53QAB060	Ceiling Suspended	40QAB060	38HDC060	58,000	10
53QKB018	In-Ceiling Cassette	40QKB024	38HDC018	18,300	11
53QKB024	In-Ceiling Cassette	40QKB036	38HDC024	24,000	12
53QKB030	In-Ceiling Cassette	40QKB036	38HDC030	30,000	13
53QKB036	In-Ceiling Cassette	40QKB036	38HDC036	33,000	14

*Rating at 80 F db, 67 F wb air entering indoor section and 95 F db air entering outdoor section.
†The 40QAB024 unit must be field configured to an 018 size unit by changing the motor speed fan tap plug. Refer to Installation Instructions for more details.

COOLING CAPACITIES

SYSTEM 1* — 53QNB009 HIGH WALL SYSTEM (38AN009 WITH 40QNB009)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		184/0.08				200/0.09				215/0.10			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	7.41	7.46	7.72	7.87	7.41	7.44	7.61	7.76	7.45	7.71	7.52	7.66
	SHG	7.10	5.75	4.78	3.88	7.18	5.79	4.74	3.85	7.30	6.09	4.70	3.82
	TC	7.33	7.38	7.65	7.80	7.33	7.36	7.53	7.68	7.37	7.63	7.43	7.57
	kW	0.597	0.597	0.608	0.613	0.598	0.598	0.605	0.611	0.601	0.611	0.603	0.609
	CMP	0.493	0.494	0.505	0.511	0.493	0.493	0.500	0.507	0.494	0.505	0.496	0.503
	LDB	43.5	50.5	55.5	60.2	46.1	52.7	57.7	62.0	47.9	53.3	59.5	63.4
	LWB	39.6	46.4	52.7	59.1	41.3	47.9	54.2	60.5	42.4	48.5	55.4	61.6
65	TCG	7.48	7.80	8.17	8.46	7.60	7.79	8.18	8.34	7.67	8.06	8.09	8.24
	SHG	7.29	6.14	5.10	4.13	7.52	6.20	5.15	4.10	7.65	6.53	5.12	4.07
	TC	7.40	7.73	8.10	8.38	7.53	7.71	8.10	8.26	7.59	7.97	8.00	8.16
	kW	0.649	0.661	0.677	0.690	0.656	0.662	0.679	0.686	0.660	0.677	0.677	0.683
	CMP	0.547	0.559	0.574	0.587	0.552	0.558	0.574	0.581	0.554	0.570	0.570	0.576
	LDB	42.5	48.5	53.9	58.9	44.4	50.8	55.8	60.8	46.4	51.3	57.6	62.3
	LWB	39.4	45.6	51.7	58.0	40.8	47.1	53.1	59.5	41.9	47.8	54.4	60.7
75	TCG	7.54	7.94	8.46	8.58	7.73	8.05	8.48	8.56	7.90	8.12	8.49	8.82
	SHG	7.48	6.37	5.34	4.18	7.73	6.57	5.41	4.20	7.90	6.73	5.47	4.34
	TC	7.47	7.87	8.38	8.50	7.65	7.97	8.40	8.48	7.81	8.04	8.40	8.73
	kW	0.715	0.728	0.749	0.753	0.724	0.734	0.752	0.754	0.733	0.738	0.754	0.770
	CMP	0.613	0.625	0.647	0.651	0.619	0.629	0.647	0.650	0.626	0.631	0.648	0.663
	LDB	41.5	47.3	52.7	58.7	43.5	49.0	54.5	60.3	45.3	50.5	56.1	61.1
	LWB	39.3	45.2	51.0	57.8	40.5	46.5	52.5	59.1	41.4	47.7	53.6	59.7
85	TCG	7.44	7.90	8.40	8.87	7.67	8.05	8.50	8.91	7.80	8.16	8.56	9.17
	SHG	7.44	6.45	5.36	4.31	7.67	6.70	5.50	4.37	7.80	6.93	5.61	4.53
	TC	7.37	7.83	8.33	8.79	7.59	7.97	8.42	8.83	7.72	8.07	8.48	9.08
	kW	0.790	0.801	0.816	0.837	0.803	0.810	0.822	0.841	0.801	0.817	0.826	0.859
	CMP	0.688	0.698	0.713	0.735	0.699	0.704	0.717	0.737	0.695	0.710	0.720	0.752
	LDB	41.7	46.9	52.5	58.0	43.7	48.4	54.1	59.5	45.7	49.6	55.4	60.3
	LWB	39.5	45.3	51.2	57.2	40.6	46.6	52.4	58.5	41.6	47.6	53.5	59.2
95	TCG	6.92	7.51	8.33	8.85	7.16	7.82	8.47	8.95	7.47	7.95	8.59	9.14
	SHG	6.92	6.29	5.38	4.32	7.16	6.64	5.57	4.41	7.47	6.90	5.73	4.55
	TC	6.84	7.44	8.26	8.78	7.08	7.74	8.39	8.87	7.38	7.86	8.50	9.05
	kW	0.860	0.878	0.899	0.917	0.873	0.884	0.907	0.924	0.880	0.894	0.915	0.939
	CMP	0.757	0.776	0.796	0.815	0.768	0.780	0.802	0.819	0.774	0.787	0.809	0.832
	LDB	44.4	47.7	52.4	57.9	46.2	48.7	53.8	59.3	47.2	49.7	54.9	60.2
	LWB	41.0	46.3	51.3	57.2	41.9	47.1	52.5	58.4	42.4	48.0	53.5	59.2
105	TCG	6.44	6.95	7.89	8.77	6.63	7.13	8.22	8.85	6.89	7.25	8.33	8.95
	SHG	6.44	6.02	5.21	4.30	6.63	6.32	5.48	4.39	6.89	6.57	5.66	4.49
	TC	6.37	6.87	7.82	8.69	6.55	7.05	8.14	8.77	6.81	7.16	8.25	8.86
	kW	0.934	0.947	0.986	1.01	0.948	0.956	0.992	1.01	0.957	0.964	1.00	1.02
	CMP	0.831	0.844	0.883	0.909	0.843	0.852	0.887	0.909	0.851	0.858	0.895	0.914
	LDB	46.9	49.1	53.3	58.1	48.7	50.2	54.2	59.4	49.7	51.2	55.2	60.4
	LWB	42.2	47.6	52.3	57.4	43.2	48.6	53.0	58.6	43.7	49.4	53.9	59.5
115	TCG	5.96	6.26	7.28	8.42	6.15	6.39	7.42	8.61	6.41	6.50	7.53	8.72
	SHG	5.96	5.71	4.94	4.16	6.15	5.98	5.15	4.31	6.41	6.22	5.33	4.42
	TC	5.89	6.19	7.21	8.34	6.07	6.31	7.34	8.53	6.33	6.41	7.44	8.64
	kW	1.02	1.02	1.06	1.10	1.03	1.03	1.07	1.11	1.04	1.04	1.08	1.12
	CMP	0.913	0.920	0.958	1.00	0.924	0.927	0.966	1.01	0.930	0.934	0.973	1.02
	LDB	49.4	50.7	54.7	58.7	51.0	51.8	55.8	59.8	51.9	52.7	56.7	60.7
	LWB	43.5	49.3	53.6	58.1	44.3	50.1	54.6	59.0	44.7	50.9	55.4	59.9
125	TCG	5.43	5.67	6.45	7.60	5.68	5.79	6.55	7.72	5.89	5.92	6.65	7.81
	SHG	5.43	5.43	4.60	3.86	5.68	5.69	4.79	3.98	5.89	5.91	4.97	4.09
	TC	5.36	5.59	6.37	7.53	5.60	5.71	6.47	7.64	5.81	5.83	6.56	7.73
	kW	1.11	1.11	1.15	1.19	1.12	1.12	1.16	1.20	1.13	1.13	1.16	1.21
	CMP	1.00	1.00	1.04	1.09	1.01	1.01	1.05	1.10	1.02	1.02	1.06	1.11
	LDB	52.2	52.2	56.5	60.3	53.3	53.2	57.5	61.4	54.2	54.1	58.3	62.2
	LWB	44.9	50.6	55.3	59.6	45.4	51.4	56.2	60.6	45.8	52.0	56.9	61.3

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 2* — 53QNB012 HIGH WALL SYSTEM (38AN012 WITH 40QNB012)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		245/0.12				280/0.14				302/0.15			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	10.6	10.9	11.1	11.2	10.6	11.0	11.2	11.3	10.7	11.0	11.2	11.1
	SHG	9.99	8.37	6.81	5.53	10.2	8.55	6.94	5.58	10.4	8.61	6.98	5.54
	TC	10.5	10.8	10.9	11.1	10.5	10.9	11.0	11.1	10.6	10.9	11.0	11.0
	kW	0.742	0.750	0.752	0.756	0.747	0.756	0.759	0.761	0.752	0.758	0.761	0.760
	CMP	0.635	0.642	0.644	0.647	0.635	0.643	0.647	0.649	0.637	0.642	0.646	0.645
	LDB	42.8	48.8	54.8	59.6	46.6	52.2	57.5	62.0	48.5	54.1	59.1	63.5
	LWB	38.9	45.3	52.0	58.7	41.4	47.6	54.0	60.5	42.6	48.8	55.1	61.6
65	TCG	10.7	11.2	11.6	12.0	10.9	11.4	11.6	11.9	11.1	11.5	11.6	11.8
	SHG	10.3	8.67	7.21	5.84	10.8	9.01	7.30	5.84	11.1	9.21	7.35	5.81
	TC	10.6	11.0	11.5	11.9	10.8	11.2	11.5	11.8	11.0	11.3	11.5	11.6
	kW	0.826	0.832	0.844	0.853	0.833	0.842	0.848	0.855	0.842	0.847	0.851	0.853
	CMP	0.718	0.725	0.737	0.746	0.721	0.729	0.736	0.743	0.727	0.732	0.736	0.738
	LDB	41.5	47.7	53.2	58.4	44.9	50.7	56.3	61.1	46.5	52.2	57.9	62.6
	LWB	38.7	44.9	51.1	57.6	40.9	47.0	53.4	59.7	41.9	48.2	54.5	60.9
75	TCG	10.5	11.2	11.8	12.3	10.9	11.4	12.0	12.3	11.1	11.6	12.1	12.2
	SHG	10.3	8.85	7.38	5.95	10.9	9.27	7.65	6.01	11.1	9.55	7.78	6.03
	TC	10.4	11.1	11.7	12.2	10.8	11.3	11.9	12.2	11.0	11.5	12.0	12.1
	kW	0.911	0.924	0.938	0.950	0.923	0.933	0.948	0.954	0.931	0.941	0.954	0.955
	CMP	0.804	0.816	0.831	0.842	0.811	0.821	0.836	0.842	0.816	0.826	0.839	0.840
	LDB	41.6	47.1	52.6	58.0	44.5	49.8	55.2	60.6	46.4	51.2	56.6	62.0
	LWB	39.0	44.8	50.8	57.1	41.0	46.9	52.8	59.3	42.0	48.0	53.9	60.4
85	TCG	9.83	11.0	11.8	12.3	10.5	11.3	12.0	12.4	10.9	11.4	12.1	12.5
	SHG	9.83	8.85	7.44	5.98	10.5	9.36	7.73	6.10	10.9	9.65	7.92	6.16
	TC	9.72	10.9	11.7	12.2	10.4	11.1	11.9	12.3	10.8	11.3	12.0	12.3
	kW	1.00	1.02	1.04	1.05	1.02	1.03	1.05	1.06	1.03	1.04	1.05	1.06
	CMP	0.896	0.915	0.933	0.946	0.909	0.922	0.937	0.947	0.913	0.924	0.940	0.948
	LDB	43.4	47.1	52.4	57.9	45.8	49.6	54.9	60.3	47.0	50.9	56.2	61.6
	LWB	40.4	45.2	50.8	57.0	41.7	47.2	52.9	59.1	42.3	48.2	53.9	60.1
95	TCG	9.18	10.1	11.6	12.3	9.73	10.5	11.8	12.5	10.2	10.8	11.9	12.7
	SHG	9.18	8.38	7.39	5.96	9.73	9.03	7.75	6.17	10.2	9.42	7.94	6.28
	TC	9.07	9.95	11.5	12.2	9.61	10.4	11.7	12.4	10.0	10.6	11.6	12.5
	kW	1.10	1.12	1.15	1.17	1.12	1.13	1.16	1.18	1.13	1.14	1.17	1.19
	CMP	0.994	1.01	1.04	1.06	1.01	1.02	1.05	1.07	1.02	1.03	1.05	1.07
	LDB	45.8	48.8	52.6	57.9	48.3	50.6	54.9	60.1	49.4	51.6	56.1	61.2
	LWB	41.7	46.8	51.2	57.1	42.9	48.3	53.1	59.0	43.5	49.1	54.2	59.9
105	TCG	8.50	9.14	10.6	12.0	9.03	9.53	11.0	12.3	9.43	9.76	11.3	12.4
	SHG	8.50	7.95	6.95	5.87	9.03	8.57	7.42	6.09	9.43	8.95	7.70	6.22
	TC	8.39	9.02	10.5	11.9	8.90	9.40	10.9	12.1	9.30	9.62	11.1	12.3
	kW	1.21	1.22	1.26	1.29	1.23	1.24	1.28	1.30	1.24	1.25	1.28	1.31
	CMP	1.10	1.12	1.15	1.18	1.12	1.13	1.16	1.19	1.12	1.13	1.17	1.19
	LDB	48.4	50.5	54.2	58.3	50.6	52.1	55.9	60.3	51.6	53.1	56.9	61.4
	LWB	43.0	48.4	52.8	57.5	44.1	49.8	54.2	59.3	44.6	50.5	55.0	60.2
115	TCG	7.95	8.10	9.47	11.3	8.40	8.47	9.84	11.8	8.65	8.69	10.1	12.0
	SHG	7.95	7.47	6.47	5.56	8.40	8.08	6.93	5.90	8.65	8.44	7.21	6.09
	TC	7.84	7.99	9.36	11.2	8.27	8.34	9.72	11.6	8.51	8.55	9.92	11.9
	kW	1.33	1.34	1.37	1.41	1.35	1.35	1.39	1.43	1.36	1.36	1.40	1.44
	CMP	1.22	1.23	1.27	1.31	1.23	1.24	1.28	1.32	1.24	1.24	1.28	1.33
	LDB	50.4	52.3	56.0	59.4	52.7	53.8	57.5	60.9	54.0	54.6	58.4	61.8
	LWB	44.0	50.2	54.5	58.6	45.1	51.3	55.8	59.9	45.7	51.9	56.4	60.6
125	TCG	7.27	7.40	8.52	10.1	7.68	7.69	8.87	10.5	7.92	7.89	9.08	10.7
	SHG	7.27	7.14	6.08	5.11	7.68	7.67	6.54	5.42	7.92	7.89	6.82	5.60
	TC	7.16	7.29	8.41	9.97	7.55	7.56	8.75	10.3	7.78	7.75	8.94	10.5
	kW	1.46	1.46	1.50	1.54	1.48	1.47	1.51	1.56	1.49	1.49	1.52	1.57
	CMP	1.35	1.35	1.39	1.43	1.36	1.36	1.40	1.44	1.37	1.37	1.40	1.45
	LDB	53.0	53.5	57.5	61.2	55.1	55.1	58.8	62.5	56.2	56.3	59.6	63.3
	LWB	45.3	51.3	55.9	60.2	46.3	52.4	57.0	61.4	46.8	52.9	57.6	62.1

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 3* — 53QNB018 HIGH WALL SYSTEM (38HDC018 WITH 40QNB018)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		360/0.12				414/0.13				480/0.15			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	16.1	16.9	17.4	17.6	16.5	17.2	17.3	17.8	17.0	17.4	17.8	18.0
	SHG	15.2	13.0	10.7	8.63	16.0	13.3	10.8	8.76	16.8	13.9	11.3	8.91
	TC	16.0	16.8	17.3	17.5	16.4	17.1	17.2	17.6	16.8	17.2	17.7	17.8
	kW	1.01	1.02	1.02	1.03	1.02	1.03	1.03	1.03	1.03	1.04	1.04	1.04
	CMP	0.860	0.868	0.873	0.874	0.864	0.871	0.871	0.878	0.871	0.873	0.879	0.881
	LDB	41.4	47.1	52.9	58.2	44.7	50.3	56.3	60.8	48.0	53.7	58.7	63.2
	LWB	38.1	44.2	50.7	57.5	40.5	46.6	53.3	59.6	42.6	48.9	55.0	61.4
65	TCG	15.8	17.0	17.7	18.2	16.3	17.3	17.8	18.4	16.8	17.7	18.5	18.6
	SHG	15.2	13.2	10.9	8.87	16.1	13.9	11.2	8.99	16.8	14.6	11.8	9.18
	TC	15.7	16.8	17.5	18.1	16.2	17.2	17.6	18.2	16.6	17.6	18.3	18.4
	kW	1.11	1.12	1.13	1.14	1.12	1.13	1.14	1.15	1.13	1.15	1.16	1.16
	CMP	0.958	0.971	0.979	0.989	0.964	0.976	0.980	0.990	0.968	0.982	0.993	0.993
	LDB	41.3	46.5	52.3	57.6	44.4	49.5	55.5	60.3	48.0	52.3	57.6	62.7
	LWB	38.6	44.1	50.5	56.9	40.7	46.5	52.9	59.1	42.8	48.6	54.6	61.0
75	TCG	15.1	16.5	17.6	18.6	15.8	17.0	18.1	18.5	16.6	17.5	18.4	18.9
	SHG	14.9	13.1	11.0	9.01	15.8	13.9	11.6	9.08	16.6	14.7	12.0	9.37
	TC	15.0	16.4	17.5	18.5	15.7	16.9	18.0	18.4	16.4	17.3	18.2	18.7
	kW	1.20	1.22	1.24	1.26	1.22	1.24	1.25	1.26	1.24	1.25	1.27	1.28
	CMP	1.05	1.07	1.09	1.11	1.06	1.08	1.10	1.10	1.07	1.09	1.10	1.11
	LDB	42.2	46.8	52.1	57.3	45.1	49.4	54.6	60.1	48.5	52.0	57.2	62.3
	LWB	39.4	44.7	50.5	56.6	41.3	46.8	52.6	59.0	43.0	48.8	54.6	60.8
85	TCG	14.4	15.9	17.3	18.6	15.2	16.4	17.7	18.8	16.0	16.9	18.1	18.8
	SHG	14.4	12.9	10.9	8.98	15.2	13.7	11.5	9.24	16.0	14.7	12.0	9.39
	TC	14.3	15.7	17.2	18.4	15.0	16.3	17.6	18.7	15.9	16.7	17.9	18.7
	kW	1.28	1.32	1.35	1.38	1.31	1.34	1.36	1.39	1.34	1.35	1.38	1.39
	CMP	1.13	1.17	1.20	1.23	1.15	1.18	1.21	1.23	1.18	1.19	1.21	1.23
	LDB	43.5	47.4	52.3	57.4	46.5	49.8	54.7	59.8	49.5	52.2	57.2	62.3
	LWB	40.4	45.5	50.9	56.6	42.0	47.4	52.9	58.7	43.6	49.3	54.9	60.8
95	TCG	13.7	15.0	16.6	17.9	14.5	15.5	17.1	18.3	15.3	16.1	17.5	18.5
	SHG	13.7	12.4	10.7	8.71	14.5	13.4	11.3	9.04	15.3	14.4	11.9	9.34
	TC	13.6	14.9	16.4	17.8	14.4	15.4	16.9	18.1	15.1	15.9	17.3	18.4
	kW	1.37	1.41	1.45	1.48	1.40	1.43	1.47	1.50	1.43	1.45	1.49	1.51
	CMP	1.22	1.26	1.30	1.33	1.24	1.27	1.31	1.34	1.27	1.29	1.32	1.35
	LDB	45.2	48.5	53.1	58.0	48.1	50.6	55.3	60.2	50.9	52.7	57.4	62.4
	LWB	41.4	46.5	51.7	57.2	42.8	48.3	53.5	59.2	44.3	50.0	55.3	61.0
105	TCG	13.0	14.1	15.7	17.3	13.8	14.6	16.2	17.7	14.6	15.1	16.7	17.9
	SHG	13.0	12.0	10.3	8.47	13.8	12.9	11.0	8.82	14.6	13.9	11.7	9.15
	TC	12.9	14.0	15.6	17.2	13.6	14.4	16.1	17.5	14.4	14.9	16.5	17.7
	kW	1.45	1.49	1.55	1.60	1.48	1.51	1.57	1.61	1.52	1.54	1.59	1.62
	CMP	1.30	1.34	1.40	1.45	1.33	1.35	1.41	1.46	1.35	1.37	1.43	1.46
	LDB	47.0	49.6	54.0	58.7	49.6	51.6	55.9	60.7	52.4	53.6	57.9	62.8
	LWB	42.3	47.6	52.6	57.8	43.6	49.3	54.3	59.7	45.0	50.8	55.9	61.4
115	TCG	12.4	13.2	14.7	16.4	13.1	13.6	15.2	16.8	13.8	14.1	15.7	17.1
	SHG	12.4	11.6	9.86	8.12	13.1	12.4	10.5	8.52	13.8	13.4	11.3	8.93
	TC	12.2	13.1	14.6	16.3	12.9	13.5	15.1	16.7	13.6	13.9	15.5	17.0
	kW	1.53	1.56	1.63	1.70	1.57	1.59	1.66	1.72	1.60	1.62	1.68	1.73
	CMP	1.38	1.41	1.48	1.55	1.41	1.43	1.50	1.56	1.44	1.45	1.52	1.57
	LDB	48.7	50.8	55.1	59.6	51.2	52.6	56.9	61.4	53.8	54.6	58.6	63.2
	LWB	43.1	48.7	53.6	58.7	44.4	50.2	55.2	60.3	45.7	51.6	56.7	61.9
125	TCG	11.6	12.2	13.7	15.3	12.3	12.7	14.2	15.8	13.0	13.1	14.6	16.2
	SHG	11.6	11.1	9.44	7.70	12.3	12.0	10.1	8.14	13.0	12.9	10.9	8.61
	TC	11.4	12.1	13.6	15.2	12.1	12.5	14.0	15.6	12.8	12.9	14.4	16.0
	kW	1.61	1.64	1.71	1.79	1.65	1.66	1.73	1.81	1.68	1.69	1.76	1.84
	CMP	1.46	1.48	1.56	1.64	1.49	1.50	1.58	1.66	1.52	1.53	1.60	1.67
	LDB	50.7	52.0	56.2	60.6	53.0	53.7	57.8	62.2	55.3	55.6	59.5	63.8
	LWB	44.1	49.8	54.7	59.7	45.3	51.1	56.1	61.2	46.4	52.4	57.5	62.6

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 4* — 53QNB024 HIGH WALL SYSTEM (38HDC024 WITH 40QNB024)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		456/0.04				502/0.04				550/0.05			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	20.9	22.2	23.1	23.6	21.4	22.6	23.5	23.9	21.8	22.4	23.4	23.7
	SHG	20.3	17.6	14.5	11.5	21.2	18.3	15.0	11.7	21.8	18.6	15.1	11.7
	TC	20.7	22.0	22.9	23.4	21.1	22.4	23.3	23.6	21.5	22.2	23.2	23.5
	kW	1.34	1.34	1.35	1.35	1.34	1.35	1.36	1.36	1.35	1.35	1.36	1.36
	CMP	1.16	1.16	1.17	1.17	1.16	1.17	1.17	1.17	1.16	1.16	1.17	1.17
	LDB	39.0	44.5	50.9	57.1	41.3	46.5	52.7	58.8	43.7	49.1	54.8	60.6
	LWB	37.5	43.3	49.7	56.4	39.1	45.0	51.2	57.9	40.6	46.8	52.9	59.4
65	TCG	20.4	22.1	23.4	24.1	21.0	22.5	23.7	24.5	21.6	22.9	23.8	24.8
	SHG	20.1	17.7	14.8	11.7	21.0	18.5	15.2	12.0	21.6	19.3	15.6	12.2
	TC	20.2	21.9	23.2	23.9	20.8	22.3	23.5	24.2	21.4	22.6	23.6	24.5
	kW	1.48	1.49	1.50	1.50	1.49	1.50	1.50	1.51	1.50	1.51	1.51	1.52
	CMP	1.30	1.31	1.32	1.32	1.30	1.31	1.32	1.32	1.31	1.31	1.32	1.33
	LDB	39.4	44.3	50.3	56.6	41.5	46.1	52.3	58.3	43.9	47.9	54.1	59.8
	LWB	38.0	43.4	49.4	56.0	39.4	45.0	51.1	57.5	40.7	46.5	52.6	58.8
75	TCG	19.8	21.5	23.2	24.7	20.5	22.0	23.5	24.6	21.2	22.4	23.8	24.9
	SHG	19.7	17.5	14.8	12.0	20.5	18.4	15.2	12.1	21.2	19.2	15.8	12.4
	TC	19.6	21.3	23.0	24.5	20.3	21.8	23.2	24.4	21.0	22.2	23.6	24.7
	kW	1.64	1.66	1.66	1.68	1.66	1.67	1.67	1.68	1.67	1.67	1.68	1.69
	CMP	1.46	1.48	1.48	1.50	1.47	1.48	1.48	1.49	1.47	1.48	1.49	1.50
	LDB	40.2	44.8	50.3	56.1	42.4	46.4	52.3	58.1	44.6	48.0	53.8	59.5
	LWB	38.7	44.0	49.6	55.6	39.9	45.5	51.3	57.4	41.0	46.8	52.6	58.7
85	TCG	19.2	20.8	22.7	24.3	19.9	21.3	23.1	24.4	20.6	21.7	23.5	24.8
	SHG	19.2	17.1	14.6	11.8	19.9	18.1	15.1	12.0	20.6	19.0	15.7	12.4
	TC	19.0	20.6	22.5	24.1	19.7	21.1	22.9	24.2	20.4	21.5	23.2	24.5
	kW	1.82	1.84	1.85	1.87	1.84	1.85	1.86	1.87	1.85	1.87	1.87	1.88
	CMP	1.65	1.66	1.67	1.69	1.65	1.67	1.68	1.69	1.66	1.67	1.68	1.69
	LDB	41.3	45.5	50.7	56.4	43.5	47.0	52.4	58.2	45.6	48.4	53.8	59.5
	LWB	39.3	44.7	50.1	55.9	40.5	46.1	51.6	57.5	41.5	47.4	52.9	58.8
95	TCG	18.6	20.0	22.0	23.9	19.4	20.5	22.4	24.2	20.0	20.9	22.8	24.4
	SHG	18.6	16.8	14.3	11.7	19.4	17.7	14.9	12.0	20.0	18.6	15.6	12.3
	TC	18.4	19.8	21.8	23.7	19.1	20.3	22.2	24.0	19.8	20.7	22.6	24.1
	kW	2.03	2.05	2.07	2.09	2.05	2.06	2.08	2.10	2.06	2.07	2.09	2.10
	CMP	1.85	1.87	1.89	1.91	1.86	1.88	1.89	1.91	1.87	1.88	1.90	1.91
	LDB	42.5	46.3	51.3	56.7	44.6	47.7	52.8	58.2	46.6	49.1	54.1	59.7
	LWB	39.9	45.5	50.7	56.2	41.1	46.8	52.1	57.7	42.1	48.0	53.3	59.0
105	TCG	18.1	19.3	21.2	23.1	18.8	19.7	21.7	23.5	19.4	20.1	22.1	23.7
	SHG	18.1	16.4	14.0	11.4	18.8	17.3	14.6	11.7	19.4	18.2	15.3	12.0
	TC	17.9	19.1	21.0	22.9	18.5	19.5	21.5	23.3	19.1	19.9	21.9	23.5
	kW	2.26	2.28	2.31	2.33	2.28	2.30	2.33	2.34	2.30	2.31	2.34	2.35
	CMP	2.08	2.10	2.13	2.15	2.10	2.11	2.14	2.16	2.11	2.12	2.15	2.16
	LDB	43.6	47.0	51.9	57.3	45.7	48.4	53.3	58.7	47.7	49.7	54.6	60.1
	LWB	40.5	46.2	51.3	56.8	41.6	47.5	52.6	58.2	42.6	48.6	53.8	59.4
115	TCG	17.5	18.5	20.4	22.4	18.1	19.0	20.9	22.7	18.7	19.3	21.2	23.0
	SHG	17.5	16.0	13.6	11.1	18.1	16.9	14.3	11.4	18.7	17.8	14.9	11.8
	TC	17.3	18.3	20.2	22.2	17.9	18.7	20.6	22.5	18.5	19.1	21.0	22.8
	kW	2.53	2.55	2.59	2.61	2.55	2.56	2.60	2.62	2.57	2.58	2.62	2.63
	CMP	2.35	2.37	2.41	2.43	2.36	2.38	2.42	2.44	2.38	2.39	2.43	2.44
	LDB	44.8	47.7	52.7	57.8	46.8	49.1	54.0	59.2	48.8	50.4	55.2	60.5
	LWB	41.2	46.9	52.0	57.4	42.2	48.1	53.3	58.7	43.2	49.2	54.4	59.9
125	TCG	16.9	17.8	19.6	21.6	17.5	18.2	20.0	21.9	18.1	18.5	20.4	22.2
	SHG	16.9	15.7	13.3	10.8	17.5	16.5	13.9	11.2	18.1	17.4	14.6	11.5
	TC	16.7	17.6	19.4	21.4	17.3	17.9	19.8	21.7	17.9	18.3	20.1	22.0
	kW	2.83	2.85	2.90	2.93	2.85	2.87	2.91	2.94	2.87	2.88	2.93	2.95
	CMP	2.65	2.67	2.72	2.75	2.67	2.68	2.73	2.76	2.68	2.69	2.74	2.76
	LDB	46.0	48.5	53.4	58.5	48.0	49.8	54.7	59.8	49.8	51.0	55.8	61.0
	LWB	41.8	47.6	52.8	58.0	42.8	48.8	53.9	59.3	43.7	49.8	55.0	60.4

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 5* — 53QAB018 CEILING-SUSPENDED SYSTEM (38HDC018 WITH 40QAB024†)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		320/0.02				400/0.03				500/0.03			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	21.5	23.6	25.6	27.3	23.2	25.2	27.0	28.1	24.6	26.1	27.6	28.4
	SHG	20.1	18.0	15.6	13.0	22.7	20.0	16.9	13.6	24.6	21.7	17.8	13.9
	TC	21.1	23.3	25.3	27.0	22.7	24.7	26.5	27.7	24.1	25.6	27.1	27.9
	kW	1.29	1.31	1.32	1.34	1.32	1.34	1.36	1.37	1.36	1.37	1.38	1.39
	CMP	1.04	1.05	1.07	1.08	1.05	1.06	1.08	1.09	1.06	1.07	1.08	1.09
	LDB	34.4	39.4	44.9	50.9	38.9	43.9	49.7	55.8	43.0	47.4	53.4	59.4
	LWB	33.7	38.7	44.3	50.5	37.6	42.9	48.7	55.1	40.2	46.0	51.9	58.2
65	TCG	19.4	21.4	23.4	25.3	21.0	22.8	24.7	26.2	22.4	23.8	25.5	26.8
	SHG	18.5	16.5	14.3	12.0	20.8	18.5	15.7	12.7	22.4	20.2	16.8	13.2
	TC	19.1	21.1	23.1	25.0	20.6	22.4	24.3	25.8	21.9	23.3	25.0	26.3
	kW	1.34	1.37	1.40	1.42	1.38	1.41	1.43	1.45	1.43	1.44	1.46	1.48
	CMP	1.10	1.12	1.15	1.17	1.12	1.14	1.16	1.18	1.14	1.15	1.17	1.19
	LDB	35.9	40.6	45.9	51.5	40.4	44.8	50.2	56.1	44.4	47.9	53.5	59.3
	LWB	35.1	40.0	45.3	51.0	38.6	43.9	49.3	55.4	41.0	46.7	52.3	58.3
75	TCG	17.3	19.1	21.2	23.3	18.8	20.5	22.5	24.3	20.2	21.4	23.5	25.1
	SHG	16.8	15.0	13.1	11.1	18.8	17.0	14.5	11.8	20.2	18.8	15.8	12.5
	TC	17.0	18.8	20.9	23.0	18.4	20.1	22.2	23.9	19.8	21.0	23.0	24.7
	kW	1.40	1.43	1.47	1.50	1.44	1.48	1.51	1.53	1.49	1.52	1.54	1.57
	CMP	1.16	1.19	1.23	1.26	1.19	1.22	1.25	1.27	1.21	1.24	1.26	1.29
	LDB	37.3	41.9	46.8	52.1	41.9	45.7	50.8	56.4	45.9	48.4	53.6	59.2
	LWB	36.4	41.3	46.3	51.6	39.6	44.9	50.0	55.7	41.7	47.4	52.7	58.4
85	TCG	15.4	17.0	18.9	20.9	16.8	18.1	20.1	22.0	18.1	19.0	20.9	22.9
	SHG	15.2	13.6	11.8	9.99	16.8	15.4	13.2	10.8	18.1	17.0	14.4	11.5
	TC	15.1	16.7	18.6	20.6	16.5	17.8	19.7	21.7	17.7	18.5	20.5	22.4
	kW	1.43	1.47	1.52	1.56	1.49	1.52	1.57	1.60	1.54	1.56	1.60	1.64
	CMP	1.20	1.24	1.29	1.33	1.24	1.27	1.32	1.35	1.27	1.29	1.33	1.37
	LDB	38.8	43.3	48.2	53.2	43.7	46.8	51.8	57.0	47.5	49.5	54.4	59.6
	LWB	37.8	42.6	47.6	52.7	40.6	46.0	51.1	56.4	42.5	48.4	53.5	58.8
95	TCG	13.6	15.0	16.7	18.5	15.0	15.9	17.7	19.6	16.1	16.6	18.4	20.3
	SHG	13.6	12.2	10.6	8.90	15.0	13.9	11.8	9.70	16.1	15.4	13.0	10.4
	TC	13.3	14.7	16.4	18.2	14.6	15.6	17.3	19.3	15.7	16.2	18.0	19.9
	kW	1.46	1.50	1.55	1.61	1.52	1.55	1.60	1.65	1.57	1.59	1.64	1.69
	CMP	1.24	1.28	1.33	1.39	1.28	1.31	1.36	1.41	1.32	1.33	1.38	1.43
	LDB	40.7	44.7	49.5	54.5	45.4	48.0	52.9	57.9	49.1	50.5	55.3	60.3
	LWB	39.0	44.0	48.9	54.0	41.5	47.2	52.2	57.3	43.3	49.3	54.4	59.6
105	TCG	12.0	13.1	14.6	16.2	13.2	13.9	15.4	17.1	14.2	14.5	16.0	17.7
	SHG	12.0	11.0	9.44	7.87	13.2	12.5	10.6	8.60	14.2	13.8	11.6	9.27
	TC	11.8	12.8	14.3	16.0	12.9	13.6	15.1	16.8	13.8	14.1	15.6	17.4
	kW	1.48	1.52	1.57	1.63	1.54	1.57	1.62	1.68	1.60	1.61	1.66	1.72
	CMP	1.27	1.31	1.36	1.42	1.31	1.34	1.39	1.45	1.35	1.36	1.42	1.48
	LDB	42.7	46.0	50.9	55.8	47.3	49.2	54.0	59.0	50.8	51.6	56.2	61.2
	LWB	40.0	45.3	50.2	55.3	42.4	48.3	53.3	58.4	44.2	50.3	55.4	60.5
115	TCG	10.5	11.3	12.6	14.0	11.6	12.0	13.3	14.8	12.4	12.5	13.8	15.3
	SHG	10.5	9.75	8.35	6.91	11.6	11.1	9.38	7.56	12.4	12.3	10.3	8.18
	TC	10.3	11.0	12.4	13.8	11.3	11.7	13.0	14.5	12.1	12.1	13.4	15.0
	kW	1.49	1.52	1.58	1.65	1.55	1.57	1.63	1.70	1.61	1.61	1.67	1.74
	CMP	1.28	1.32	1.38	1.45	1.34	1.35	1.41	1.48	1.37	1.38	1.44	1.50
	LDB	44.7	47.4	52.2	57.1	49.1	50.3	55.1	60.1	52.5	52.7	57.2	62.1
	LWB	41.1	46.6	51.5	56.6	43.3	49.3	54.3	59.4	45.0	51.2	56.3	61.4
125	TCG	9.05	9.56	10.8	12.0	9.99	10.2	11.3	12.6	10.7	10.7	11.7	13.1
	SHG	9.05	8.58	7.33	6.01	9.99	9.80	8.25	6.60	10.7	10.7	9.14	7.16
	TC	8.84	9.35	10.5	11.8	9.72	9.90	11.0	12.4	10.4	10.4	11.4	12.7
	kW	1.49	1.51	1.58	1.65	1.55	1.56	1.63	1.70	1.61	1.61	1.67	1.73
	CMP	1.30	1.32	1.39	1.46	1.35	1.36	1.42	1.49	1.39	1.39	1.44	1.51
	LDB	47.1	48.8	53.5	58.4	51.0	51.6	56.2	61.1	54.2	54.2	58.1	63.0
	LWB	42.3	48.0	52.8	57.8	44.3	50.4	55.4	60.4	45.8	52.0	57.2	62.3

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.
†The 40QAB024 unit must be field configured to an 018 size unit by changing the motor speed fan tap plug. Refer to Installation Instructions for more details.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 6* — 53QAB024 CEILING-SUSPENDED SYSTEM (38HDC024 WITH 40QAB024)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		400/0.03				500/0.03				600/0.04			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	22.7	24.2	25.8	26.6	23.7	25.1	26.2	26.6	24.6	25.4	26.1	27.4
	SHG	21.3	18.5	15.8	12.7	23.1	19.8	16.4	12.9	24.5	20.6	16.7	13.4
	TC	22.3	23.8	25.5	26.2	23.3	24.6	25.7	26.1	24.1	24.8	25.6	26.8
	kW	1.41	1.42	1.44	1.45	1.44	1.45	1.47	1.47	1.47	1.47	1.48	1.50
	CMP	1.15	1.15	1.17	1.18	1.15	1.16	1.18	1.18	1.16	1.17	1.17	1.19
	LDB	35.5	41.5	47.2	53.7	39.8	45.7	51.8	57.9	42.9	48.9	55.0	60.1
	LWB	34.4	40.3	46.3	53.2	37.9	43.9	50.2	56.9	40.1	46.4	52.7	58.7
65	TCG	21.5	23.5	25.3	26.3	22.8	24.5	26.2	27.2	23.7	25.2	26.6	27.1
	SHG	20.4	18.2	15.5	12.6	22.5	19.6	16.5	13.2	23.7	20.9	17.2	13.3
	TC	21.1	23.2	24.9	25.9	22.3	24.0	25.8	26.8	23.2	24.7	26.1	26.6
	kW	1.53	1.54	1.56	1.57	1.56	1.57	1.59	1.61	1.58	1.60	1.62	1.62
	CMP	1.26	1.28	1.30	1.30	1.28	1.28	1.31	1.32	1.28	1.29	1.31	1.32
	LDB	36.1	41.0	46.8	53.3	39.8	45.0	50.6	56.8	43.1	47.5	53.4	59.6
	LWB	35.1	40.2	46.1	52.8	38.2	43.8	49.5	55.9	40.3	46.0	51.8	58.4
75	TCG	20.2	22.2	24.1	25.7	21.5	23.2	25.1	26.6	22.5	23.9	25.7	26.6
	SHG	19.4	17.3	14.9	12.3	21.3	18.8	16.0	12.9	22.5	20.2	16.8	13.1
	TC	19.9	21.8	23.8	25.3	21.0	22.8	24.7	26.2	22.0	23.4	25.2	26.1
	kW	1.65	1.67	1.70	1.72	1.68	1.70	1.73	1.75	1.71	1.74	1.76	1.77
	CMP	1.39	1.41	1.44	1.46	1.40	1.43	1.45	1.47	1.42	1.44	1.46	1.47
	LDB	37.0	41.8	47.2	53.1	40.7	45.3	50.8	56.6	43.9	47.7	53.3	59.2
	LWB	35.9	41.0	46.5	52.6	38.8	44.3	49.8	55.8	40.7	46.4	52.0	58.2
85	TCG	18.9	20.8	23.0	25.1	20.1	21.9	24.0	25.9	21.3	22.7	24.7	26.2
	SHG	18.4	16.4	14.3	11.9	20.1	18.1	15.4	12.6	21.3	19.4	16.3	12.9
	TC	18.6	20.5	22.6	24.7	19.7	21.5	23.6	25.5	20.8	22.2	24.2	25.7
	kW	1.76	1.80	1.84	1.87	1.80	1.84	1.87	1.90	1.84	1.87	1.89	1.92
	CMP	1.51	1.54	1.58	1.62	1.53	1.57	1.60	1.63	1.55	1.58	1.60	1.63
	LDB	37.9	42.5	47.6	53.0	41.7	45.7	50.9	56.4	44.8	47.8	53.1	58.9
	LWB	36.8	41.8	46.9	52.4	39.5	44.8	50.0	55.7	41.1	46.8	52.1	58.0
95	TCG	17.7	19.5	21.5	23.6	18.9	20.5	22.6	24.6	20.0	21.2	23.3	25.2
	SHG	17.4	15.5	13.5	11.3	18.9	17.1	14.6	12.0	20.0	18.4	15.6	12.5
	TC	17.4	19.1	21.2	23.3	18.5	20.1	22.2	24.2	19.5	20.7	22.8	24.7
	kW	1.90	1.94	1.99	2.03	1.95	1.98	2.03	2.07	1.99	2.01	2.07	2.09
	CMP	1.66	1.69	1.74	1.78	1.68	1.71	1.77	1.80	1.70	1.73	1.78	1.81
	LDB	38.8	43.4	48.4	53.6	42.8	46.4	51.4	56.7	45.8	48.5	53.4	58.9
	LWB	37.6	42.6	47.7	53.0	40.1	45.5	50.6	56.1	41.7	47.4	52.6	58.1
105	TCG	16.5	18.2	20.1	22.1	17.7	19.1	21.0	23.2	18.7	19.7	21.7	23.8
	SHG	16.5	14.7	12.7	10.6	17.7	16.2	13.8	11.4	18.7	17.5	14.8	11.9
	TC	16.2	17.8	19.7	21.8	17.4	18.7	20.6	22.8	18.3	19.3	21.2	23.3
	kW	2.06	2.10	2.15	2.21	2.11	2.14	2.20	2.26	2.15	2.17	2.23	2.29
	CMP	1.82	1.86	1.91	1.97	1.85	1.88	1.93	2.00	1.87	1.90	1.95	2.01
	LDB	39.8	44.2	49.2	54.4	44.0	47.2	52.1	57.2	46.9	49.2	54.1	59.2
	LWB	38.4	43.5	48.6	53.8	40.7	46.2	51.3	56.6	42.2	48.0	53.2	58.5
115	TCG	15.4	16.9	18.7	20.6	16.6	17.7	19.5	21.5	17.5	18.3	20.1	22.1
	SHG	15.4	13.8	11.9	9.94	16.6	15.3	13.0	10.6	17.5	16.5	13.9	11.2
	TC	15.1	16.6	18.4	20.3	16.3	17.3	19.2	21.2	17.1	17.8	19.7	21.7
	kW	2.24	2.28	2.34	2.40	2.30	2.33	2.38	2.45	2.34	2.36	2.42	2.50
	CMP	2.01	2.04	2.10	2.16	2.04	2.07	2.12	2.20	2.06	2.08	2.14	2.22
	LDB	41.1	45.1	50.1	55.2	45.1	47.9	52.8	57.9	48.0	49.8	54.7	59.8
	LWB	39.2	44.3	49.4	54.6	41.3	46.9	52.0	57.3	42.8	48.7	53.8	59.0
125	TCG	14.4	15.6	17.3	19.1	15.5	16.4	18.1	20.0	16.3	16.9	18.6	20.5
	SHG	14.4	13.0	11.2	9.28	15.5	14.4	12.2	9.95	16.3	15.6	13.1	10.5
	TC	14.1	15.3	17.0	18.8	15.1	16.0	17.8	19.6	15.9	16.5	18.2	20.1
	kW	2.44	2.48	2.54	2.61	2.50	2.53	2.58	2.66	2.54	2.56	2.62	2.70
	CMP	2.21	2.25	2.31	2.37	2.24	2.27	2.33	2.41	2.27	2.29	2.35	2.44
	LDB	42.3	45.9	50.9	56.0	46.3	48.6	53.5	58.6	49.1	50.5	55.3	60.4
	LWB	39.9	45.1	50.2	55.4	41.9	47.6	52.7	57.9	43.3	49.3	54.4	59.6

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 7* — 53QAB030 CEILING-SUSPENDED SYSTEM (38HDC030 WITH 40QAB036)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		640/0.02				740/0.02				840/0.03			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	30.3	32.5	34.3	35.5	31.7	33.3	34.8	35.7	33.0	33.8	35.0	35.9
	SHG	30.3	26.5	21.9	17.3	31.7	28.2	22.9	17.7	33.0	29.8	23.7	18.1
	TC	29.9	32.0	33.8	35.0	31.1	32.7	34.2	35.2	32.3	33.1	34.4	35.3
	kW	1.94	1.96	1.98	2.00	1.97	1.99	2.01	2.02	2.01	2.02	2.04	2.05
	CMP	1.60	1.62	1.65	1.66	1.61	1.63	1.65	1.67	1.63	1.64	1.66	1.67
	LDB	40.0	45.1	51.2	57.5	43.9	47.8	54.0	60.1	46.9	50.2	56.3	62.1
	LWB	38.5	44.2	50.2	56.7	40.7	46.6	52.6	59.0	42.2	48.5	54.5	60.7
65	TCG	29.0	31.3	33.7	35.4	30.6	32.3	34.6	35.8	31.8	32.8	34.6	36.0
	SHG	29.0	25.8	21.7	17.3	30.6	27.8	23.0	17.8	31.8	29.4	23.8	18.3
	TC	28.5	30.8	33.3	35.0	30.1	31.7	34.0	35.2	31.2	32.2	34.0	35.4
	kW	2.09	2.11	2.14	2.16	2.12	2.14	2.17	2.19	2.16	2.17	2.19	2.22
	CMP	1.76	1.78	1.81	1.84	1.78	1.79	1.82	1.84	1.78	1.80	1.82	1.84
	LDB	40.9	45.3	50.9	57.0	44.3	47.7	53.3	59.6	47.4	49.9	55.8	61.6
	LWB	39.1	44.5	50.2	56.3	40.9	46.8	52.4	58.7	42.5	48.6	54.4	60.4
75	TCG	27.7	29.7	32.3	34.3	29.2	30.7	33.1	34.8	30.5	31.4	33.4	35.2
	SHG	27.7	24.9	21.0	16.8	29.2	26.8	22.3	17.5	30.5	28.6	23.4	18.1
	TC	27.2	29.3	31.8	33.8	28.7	30.1	32.6	34.3	29.9	30.8	32.8	34.6
	kW	2.24	2.27	2.31	2.33	2.29	2.31	2.34	2.37	2.33	2.34	2.36	2.40
	CMP	1.92	1.95	1.99	2.02	1.95	1.97	2.00	2.03	1.96	1.97	2.00	2.03
	LDB	42.0	45.9	51.3	57.2	45.3	48.2	53.7	59.5	48.2	50.2	55.8	61.4
	LWB	39.7	45.2	50.6	56.6	41.4	47.3	52.8	58.8	42.9	49.0	54.6	60.4
85	TCG	26.3	28.2	30.8	33.1	27.8	29.1	31.6	33.9	29.1	29.9	32.2	34.5
	SHG	26.3	23.9	20.3	16.3	27.8	25.9	21.6	17.1	29.1	27.8	22.9	17.9
	TC	25.8	27.7	30.4	32.7	27.3	28.6	31.1	33.4	28.5	29.3	31.6	33.9
	kW	2.40	2.44	2.48	2.51	2.45	2.47	2.50	2.55	2.50	2.51	2.54	2.58
	CMP	2.09	2.12	2.17	2.20	2.12	2.14	2.17	2.21	2.14	2.15	2.18	2.22
	LDB	43.1	46.5	51.7	57.4	46.3	48.6	54.0	59.5	49.0	50.4	55.8	61.2
	LWB	40.3	45.8	51.1	56.8	41.9	47.8	53.2	58.9	43.3	49.4	54.8	60.4
95	TCG	24.9	26.5	29.1	31.7	26.4	27.4	29.9	32.3	27.6	28.1	30.6	32.9
	SHG	24.9	22.9	19.4	15.7	26.4	24.9	20.8	16.5	27.6	26.7	22.1	17.3
	TC	24.5	26.0	28.7	31.2	25.9	26.9	29.4	31.8	27.0	27.5	30.0	32.3
	kW	2.58	2.61	2.67	2.71	2.63	2.65	2.70	2.74	2.68	2.69	2.73	2.77
	CMP	2.28	2.31	2.36	2.40	2.31	2.33	2.37	2.41	2.33	2.34	2.38	2.43
	LDB	44.3	47.3	52.3	57.8	47.4	49.3	54.4	59.9	50.0	51.0	56.1	61.5
	LWB	40.9	46.6	51.8	57.3	42.5	48.5	53.7	59.3	43.8	49.9	55.3	60.8
105	TCG	23.6	24.8	27.4	29.9	24.9	25.7	28.2	30.6	26.1	26.4	28.8	31.2
	SHG	23.6	21.9	18.5	14.9	24.9	23.8	19.9	15.8	26.1	25.6	21.3	16.6
	TC	23.2	24.4	26.9	29.5	24.4	25.2	27.7	30.1	25.5	25.8	28.3	30.6
	kW	2.77	2.80	2.87	2.91	2.83	2.84	2.90	2.94	2.87	2.88	2.93	2.98
	CMP	2.48	2.51	2.57	2.61	2.51	2.53	2.59	2.63	2.54	2.54	2.60	2.64
	LDB	45.5	48.0	53.1	58.4	48.5	50.0	55.0	60.4	51.1	51.7	56.5	61.9
	LWB	41.5	47.4	52.5	57.9	43.1	49.1	54.3	59.8	44.3	50.5	55.8	61.2
115	TCG	22.3	23.2	25.6	28.1	23.5	24.0	26.4	28.8	24.6	24.7	26.9	29.3
	SHG	22.3	20.9	17.6	14.2	23.5	22.8	19.0	15.0	24.6	24.4	20.3	15.8
	TC	21.9	22.8	25.2	27.7	23.0	23.5	25.9	28.3	24.0	24.2	26.4	28.8
	kW	2.99	3.01	3.08	3.13	3.04	3.05	3.12	3.17	3.09	3.09	3.15	3.20
	CMP	2.70	2.73	2.79	2.84	2.73	2.75	2.81	2.86	2.76	2.76	2.83	2.87
	LDB	46.7	48.8	53.8	59.0	49.7	50.7	55.6	60.9	52.2	52.3	57.1	62.3
	LWB	42.1	48.1	53.2	58.5	43.6	49.8	55.0	60.3	44.9	51.1	56.3	61.7
125	TCG	21.0	21.7	23.9	26.3	22.1	22.4	24.6	26.9	23.1	23.1	25.1	27.5
	SHG	21.0	20.0	16.8	13.5	22.1	21.7	18.1	14.3	23.1	23.1	19.4	15.1
	TC	20.6	21.3	23.5	25.9	21.7	21.9	24.1	26.4	22.5	22.5	24.6	26.9
	kW	3.22	3.24	3.30	3.37	3.27	3.28	3.34	3.40	3.32	3.32	3.38	3.44
	CMP	2.94	2.96	3.03	3.09	2.97	2.98	3.05	3.10	3.00	3.00	3.06	3.12
	LDB	47.9	49.5	54.5	59.7	50.8	51.4	56.3	61.4	53.3	53.2	57.6	62.8
	LWB	42.8	48.8	53.9	59.2	44.2	50.4	55.6	60.9	45.4	51.6	56.9	62.2

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 8* — 53QAB036 CEILING-SUSPENDED SYSTEM (38HDC036 WITH 40QAB036)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		640/0.03				740/0.03				840/0.04			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	37.0	39.7	41.2	43.2	38.4	40.9	42.6	43.5	39.5	41.0	42.5	43.7
	SHG	35.3	30.9	25.5	20.8	37.8	32.9	27.0	21.2	39.5	34.1	27.5	21.5
	TC	36.4	39.2	40.6	42.6	37.7	40.2	42.0	42.8	38.8	40.3	41.7	42.9
	kW	1.99	2.01	2.02	2.04	2.02	2.04	2.06	2.07	2.05	2.06	2.08	2.10
	CMP	1.67	1.69	1.70	1.73	1.68	1.70	1.72	1.73	1.69	1.70	1.72	1.73
	LDB	37.1	42.5	49.2	55.0	40.3	45.5	51.8	58.1	43.5	48.7	54.8	60.4
	LWB	35.9	41.5	48.1	54.5	38.4	44.2	50.5	57.2	40.5	46.6	52.8	59.2
65	TCG	34.8	37.6	39.9	41.8	36.2	38.8	40.7	42.1	37.4	39.4	41.1	42.3
	SHG	33.7	29.5	24.8	20.1	36.1	31.6	26.0	20.5	37.4	33.2	26.9	20.9
	TC	34.3	37.0	39.3	41.3	35.6	38.1	40.1	41.5	36.7	38.7	40.3	41.6
	kW	2.23	2.25	2.27	2.29	2.26	2.28	2.30	2.32	2.29	2.31	2.33	2.35
	CMP	1.92	1.93	1.95	1.98	1.92	1.94	1.96	1.98	1.93	1.95	1.97	1.98
	LDB	37.5	42.8	48.8	54.9	40.7	45.7	51.8	57.9	44.1	48.2	54.4	60.2
	LWB	36.4	41.9	47.9	54.3	38.9	44.5	50.6	57.0	40.8	46.7	52.8	59.1
75	TCG	32.4	35.2	37.7	39.9	33.9	36.3	38.6	40.3	35.2	37.0	39.1	40.7
	SHG	31.7	27.9	23.6	19.2	33.8	29.9	24.9	19.7	35.2	31.7	25.9	20.2
	TC	31.8	34.6	37.2	39.4	33.3	35.7	38.0	39.7	34.5	36.3	38.4	40.0
	kW	2.50	2.53	2.56	2.59	2.54	2.57	2.59	2.62	2.58	2.60	2.62	2.65
	CMP	2.18	2.22	2.24	2.28	2.20	2.23	2.26	2.28	2.22	2.23	2.26	2.29
	LDB	38.4	43.4	49.1	55.0	41.7	46.1	51.9	57.9	44.9	48.5	54.3	60.1
	LWB	37.2	42.6	48.3	54.5	39.5	45.1	50.9	57.1	41.2	47.1	52.9	59.0
85	TCG	29.9	32.7	35.6	38.1	31.5	33.8	36.5	38.5	33.0	34.7	37.1	39.1
	SHG	29.7	26.4	22.5	18.3	31.5	28.3	23.8	18.9	33.0	30.2	24.9	19.6
	TC	29.4	32.2	35.0	37.6	30.9	33.2	35.9	37.9	32.4	34.0	36.4	38.4
	kW	2.77	2.82	2.85	2.89	2.82	2.85	2.89	2.92	2.87	2.88	2.91	2.95
	CMP	2.45	2.50	2.54	2.57	2.48	2.51	2.55	2.58	2.50	2.52	2.55	2.59
	LDB	39.4	44.0	49.4	55.2	42.7	46.6	52.0	57.9	45.6	48.7	54.3	60.0
	LWB	38.1	43.2	48.7	54.6	40.1	45.6	51.1	57.2	41.6	47.5	53.1	59.0
95	TCG	27.6	30.1	33.0	35.4	29.2	31.2	34.0	36.1	30.6	32.0	34.6	36.8
	SHG	27.6	24.6	21.0	17.1	29.2	26.6	22.4	17.8	30.6	28.4	23.6	18.6
	TC	27.1	29.6	32.5	34.9	28.6	30.6	33.4	35.5	30.0	31.4	34.0	36.1
	kW	3.07	3.13	3.18	3.22	3.13	3.18	3.22	3.25	3.19	3.21	3.25	3.29
	CMP	2.76	2.82	2.87	2.90	2.79	2.84	2.88	2.91	2.83	2.85	2.89	2.93
	LDB	40.6	44.9	50.1	55.8	44.0	47.2	52.5	58.3	46.8	49.3	54.5	60.1
	LWB	38.9	44.2	49.4	55.2	40.7	46.3	51.7	57.6	42.2	48.1	53.5	59.3
105	TCG	25.4	27.5	30.3	32.7	26.9	28.5	31.3	33.4	28.2	29.3	32.0	34.1
	SHG	25.4	22.9	19.6	15.9	26.9	24.8	21.0	16.6	28.2	26.6	22.2	17.4
	TC	24.9	27.0	29.8	32.2	26.4	28.0	30.7	32.8	27.6	28.7	31.4	33.5
	kW	3.40	3.46	3.54	3.57	3.47	3.51	3.58	3.61	3.53	3.56	3.62	3.66
	CMP	3.09	3.15	3.23	3.26	3.13	3.18	3.25	3.27	3.17	3.20	3.26	3.30
	LDB	42.1	45.9	50.9	56.5	45.3	48.1	53.1	58.8	48.0	49.9	55.0	60.6
	LWB	39.7	45.1	50.2	55.9	41.4	47.1	52.3	58.1	42.8	48.7	54.0	59.7
115	TCG	23.3	25.0	27.6	30.1	24.6	25.9	28.5	30.9	25.8	26.6	29.2	31.3
	SHG	23.3	21.2	18.1	14.8	24.6	23.0	19.4	15.5	25.8	24.7	20.7	16.2
	TC	22.8	24.5	27.1	29.7	24.1	25.4	28.0	30.3	25.2	26.0	28.6	30.7
	kW	3.76	3.82	3.91	3.98	3.83	3.88	3.97	4.02	3.90	3.92	4.01	4.05
	CMP	3.45	3.51	3.60	3.67	3.50	3.54	3.63	3.68	3.54	3.57	3.65	3.69
	LDB	43.5	46.8	51.8	57.1	46.7	49.0	53.9	59.3	49.3	50.7	55.6	61.1
	LWB	40.5	46.0	51.1	56.6	42.1	48.0	53.1	58.6	43.5	49.5	54.7	60.3
125	TCG	21.2	22.5	24.9	27.3	22.5	23.3	25.6	28.0	23.5	24.0	26.3	28.5
	SHG	21.2	19.6	16.6	13.5	22.5	21.3	17.9	14.3	23.5	22.8	19.1	14.9
	TC	20.8	22.1	24.5	26.9	22.0	22.8	25.1	27.5	22.9	23.4	25.7	27.9
	kW	4.14	4.20	4.30	4.39	4.22	4.26	4.36	4.43	4.28	4.30	4.41	4.46
	CMP	3.83	3.89	3.99	4.07	3.88	3.92	4.02	4.10	3.93	3.95	4.05	4.10
	LDB	45.1	47.8	52.8	58.0	48.1	49.8	54.8	60.0	50.7	51.5	56.3	61.6
	LWB	41.3	47.0	52.1	57.4	42.8	48.8	54.0	59.3	44.1	50.2	55.4	60.8

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 9* — 53QAB048 CEILING-SUSPENDED SYSTEM (38HDC048 WITH 40QAB048)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		1100/0.05				1160/0.05				1200/0.06			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	47.5	49.7	51.8	53.0	48.2	49.9	51.9	53.1	48.6	50.3	51.9	53.1
	SHG	46.5	39.7	32.7	25.9	47.6	40.4	33.0	26.1	48.2	41.0	33.3	26.2
	TC	46.4	48.6	50.7	51.9	47.0	48.7	50.7	51.9	47.4	49.1	50.7	51.9
	kW	2.86	2.87	2.90	2.91	2.88	2.89	2.92	2.93	2.90	2.91	2.93	2.95
	CMP	2.26	2.28	2.30	2.31	2.27	2.28	2.30	2.31	2.27	2.28	2.30	2.32
	LDB	42.0	47.6	53.5	59.2	43.1	48.9	54.7	60.2	43.9	49.4	55.4	60.8
	LWB	39.2	45.3	51.5	58.0	40.0	46.3	52.4	58.8	40.5	46.7	53.0	59.4
65	TCG	46.7	49.3	51.9	54.2	47.2	49.7	52.3	53.8	47.4	50.1	52.4	54.7
	SHG	46.2	39.9	33.0	26.4	47.0	40.8	33.6	26.4	47.4	41.5	33.9	26.9
	TC	45.6	48.2	50.8	53.2	46.0	48.5	51.2	52.7	46.3	48.9	51.2	53.5
	kW	3.18	3.19	3.22	3.25	3.20	3.21	3.24	3.26	3.21	3.23	3.26	3.29
	CMP	2.59	2.61	2.63	2.67	2.59	2.61	2.64	2.66	2.59	2.62	2.64	2.67
	LDB	41.6	47.0	52.8	58.5	43.0	48.0	53.8	59.6	44.0	48.6	54.5	60.0
	LWB	39.3	45.2	51.2	57.4	40.1	46.0	52.0	58.4	40.7	46.5	52.6	58.7
75	TCG	44.7	47.6	50.7	53.4	45.4	48.1	51.1	53.2	45.8	48.4	51.3	54.1
	SHG	44.5	39.2	32.5	26.1	45.3	40.1	33.2	26.2	45.8	40.8	33.5	26.7
	TC	43.7	46.6	49.6	52.4	44.3	46.9	50.0	52.1	44.7	47.3	50.1	52.9
	kW	3.52	3.55	3.58	3.62	3.54	3.57	3.60	3.63	3.56	3.59	3.61	3.66
	CMP	2.95	2.97	3.00	3.04	2.95	2.98	3.01	3.04	2.96	2.98	3.01	3.05
	LDB	42.5	47.1	52.8	58.4	43.8	48.1	53.7	59.5	44.7	48.6	54.4	59.8
	LWB	39.8	45.5	51.3	57.4	40.6	46.4	52.2	58.3	41.1	46.9	52.7	58.6
85	TCG	42.8	46.0	49.4	52.7	43.7	46.4	49.9	52.6	44.2	46.8	50.1	53.4
	SHG	42.8	38.4	32.0	25.8	43.7	39.3	32.7	25.9	44.2	40.0	33.2	26.5
	TC	41.7	45.0	48.4	51.6	42.6	45.3	48.8	51.5	43.1	45.6	49.0	52.3
	kW	3.86	3.90	3.94	3.98	3.89	3.92	3.96	4.00	3.91	3.94	3.97	4.03
	CMP	3.30	3.34	3.37	3.42	3.31	3.34	3.38	3.42	3.32	3.35	3.38	3.44
	LDB	43.4	47.2	52.8	58.3	44.6	48.2	53.7	59.3	45.4	48.7	54.2	59.6
	LWB	40.4	45.9	51.5	57.3	41.0	46.7	52.3	58.2	41.4	47.2	52.8	58.5
95	TCG	40.8	43.6	47.3	50.3	41.6	44.1	47.8	50.5	42.1	44.5	48.1	51.1
	SHG	40.8	37.0	31.1	24.8	41.6	38.1	31.8	25.1	42.1	38.8	32.3	25.5
	TC	39.7	42.6	46.3	49.3	40.5	43.0	46.7	49.4	41.0	43.4	47.0	50.0
	kW	4.23	4.28	4.33	4.37	4.26	4.31	4.35	4.38	4.28	4.33	4.37	4.41
	CMP	3.68	3.74	3.78	3.82	3.70	3.75	3.79	3.82	3.71	3.75	3.79	3.84
	LDB	44.5	47.9	53.2	58.8	45.7	48.7	54.0	59.7	46.5	49.2	54.5	60.1
	LWB	41.0	46.6	52.0	57.8	41.6	47.3	52.7	58.6	42.0	47.7	53.2	59.0
105	TCG	38.6	41.0	45.0	48.3	39.5	41.5	45.4	48.5	39.9	41.9	45.7	49.1
	SHG	38.6	35.5	30.0	24.0	39.5	36.5	30.7	24.3	39.9	37.2	31.2	24.7
	TC	37.6	40.0	44.0	47.3	38.4	40.5	44.4	47.5	38.8	40.8	44.6	48.0
	kW	4.62	4.67	4.75	4.80	4.65	4.70	4.77	4.81	4.68	4.72	4.79	4.84
	CMP	4.09	4.14	4.21	4.26	4.10	4.15	4.22	4.26	4.11	4.16	4.23	4.28
	LDB	45.9	48.7	53.7	59.2	47.0	49.5	54.5	60.0	47.7	50.0	54.9	60.4
	LWB	41.7	47.4	52.6	58.2	42.3	48.1	53.3	59.0	42.7	48.5	53.7	59.3
115	TCG	36.6	38.5	42.3	45.9	37.3	38.9	42.8	46.3	37.8	39.2	43.1	46.7
	SHG	36.6	34.0	28.8	23.0	37.3	35.0	29.5	23.4	37.8	35.6	30.0	23.8
	TC	35.6	37.5	41.3	44.9	36.2	37.9	41.8	45.2	36.7	38.1	42.0	45.6
	kW	5.03	5.08	5.18	5.25	5.07	5.11	5.21	5.27	5.09	5.13	5.23	5.29
	CMP	4.51	4.56	4.66	4.72	4.53	4.57	4.67	4.73	4.54	4.58	4.68	4.74
	LDB	47.2	49.6	54.4	59.7	48.3	50.3	55.1	60.4	49.0	50.8	55.5	60.8
	LWB	42.4	48.2	53.3	58.8	43.0	48.8	54.0	59.5	43.3	49.2	54.4	59.8
125	TCG	34.4	35.9	39.5	42.9	35.1	36.4	39.9	43.7	35.5	36.6	40.1	44.0
	SHG	34.4	32.5	27.4	21.8	35.1	33.5	28.1	22.4	35.5	34.1	28.6	22.7
	TC	33.4	35.0	38.5	41.9	34.0	35.3	38.9	42.7	34.4	35.5	39.0	42.9
	kW	5.46	5.50	5.61	5.68	5.49	5.53	5.64	5.73	5.52	5.55	5.66	5.76
	CMP	4.95	4.99	5.10	5.16	4.97	5.00	5.11	5.21	4.98	5.01	5.12	5.22
	LDB	48.6	50.4	55.2	60.5	49.7	51.2	55.9	61.0	50.4	51.6	56.3	61.4
	LWB	43.1	49.0	54.1	59.6	43.7	49.6	54.8	60.0	44.0	50.0	55.2	60.4

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 10* — 53QAB060 CEILING-SUSPENDED SYSTEM (38HDC060 WITH 40QAB060)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		1040/0.03				1220/0.04				1600/0.06			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	58.9	63.3	67.7	71.5	61.4	65.4	69.6	71.4	66.0	67.6	71.2	73.3
	SHG	55.8	48.9	41.7	34.2	60.1	52.3	43.9	34.6	66.0	58.2	47.4	36.7
	TC	57.8	62.2	66.6	70.4	60.0	64.1	68.3	70.1	64.3	65.9	69.4	71.6
	kW	3.94	3.99	4.05	4.11	4.02	4.07	4.13	4.15	4.20	4.21	4.27	4.30
	CMP	3.37	3.42	3.48	3.53	3.39	3.44	3.51	3.53	3.46	3.47	3.52	3.56
	LDB	36.8	42.2	47.9	53.8	40.3	45.6	51.3	57.5	46.9	51.0	56.5	62.0
	LWB	35.4	41.1	46.9	53.2	38.3	44.1	49.9	56.6	42.3	48.5	54.3	60.5
65	TCG	56.1	60.6	65.2	69.6	58.7	62.6	66.7	71.1	63.3	65.3	68.9	71.8
	SHG	53.7	47.2	40.3	33.3	58.1	50.6	42.4	34.5	63.3	57.0	46.5	36.1
	TC	55.0	59.5	64.1	68.5	57.4	61.3	65.4	69.8	61.6	63.6	67.3	70.1
	kW	4.16	4.21	4.27	4.34	4.24	4.28	4.34	4.42	4.41	4.43	4.48	4.53
	CMP	3.61	3.66	3.72	3.79	3.64	3.68	3.74	3.81	3.70	3.72	3.77	3.82
	LDB	37.2	42.5	48.1	53.8	40.6	45.8	51.5	57.0	47.4	50.7	56.3	61.8
	LWB	36.0	41.5	47.2	53.2	38.7	44.4	50.2	56.1	42.5	48.6	54.4	60.3
75	TCG	52.8	57.3	61.9	66.3	55.4	59.3	63.7	68.0	60.3	62.1	66.1	69.4
	SHG	51.0	45.1	38.6	31.8	55.1	48.6	40.8	33.1	60.3	55.1	45.2	35.1
	TC	51.7	56.2	60.9	65.3	54.2	58.1	62.4	66.7	58.6	60.5	64.4	67.7
	kW	4.36	4.43	4.50	4.57	4.46	4.51	4.57	4.65	4.63	4.65	4.71	4.77
	CMP	3.84	3.91	3.97	4.04	3.88	3.93	4.00	4.07	3.95	3.97	4.03	4.09
	LDB	38.2	43.1	48.6	54.3	41.6	46.2	51.7	57.3	48.1	50.9	56.3	61.8
	LWB	36.8	42.1	47.7	53.7	39.3	44.9	50.6	56.4	42.8	48.9	54.6	60.4
85	TCG	49.4	54.1	58.7	63.1	52.1	56.1	60.7	64.9	57.2	58.9	63.2	66.9
	SHG	48.4	43.0	36.8	30.2	52.1	46.6	39.3	31.7	57.2	53.2	43.9	34.2
	TC	48.4	53.0	57.7	62.0	50.9	54.9	59.5	63.6	55.6	57.3	61.6	65.3
	kW	4.57	4.66	4.73	4.80	4.67	4.73	4.81	4.88	4.86	4.87	4.95	5.01
	CMP	4.07	4.15	4.22	4.29	4.12	4.18	4.26	4.33	4.21	4.22	4.30	4.36
	LDB	39.1	43.7	49.1	54.8	42.6	46.6	52.0	57.6	48.8	51.1	56.3	61.7
	LWB	37.6	42.8	48.3	54.1	40.0	45.4	50.9	56.7	43.2	49.3	54.8	60.5
95	TCG	46.2	50.4	55.1	59.4	48.9	52.5	57.0	61.2	53.9	55.3	59.5	63.5
	SHG	45.8	40.7	34.9	28.6	48.9	44.3	37.4	30.1	53.9	50.8	42.0	32.7
	TC	45.2	49.4	54.1	58.4	47.7	51.3	55.8	60.1	52.3	53.8	58.0	61.9
	kW	4.78	4.87	4.96	5.03	4.88	4.96	5.04	5.11	5.09	5.10	5.18	5.25
	CMP	4.30	4.39	4.48	4.55	4.36	4.44	4.51	4.59	4.47	4.48	4.56	4.63
	LDB	40.1	44.7	49.8	55.4	43.8	47.3	52.5	58.1	49.7	51.5	56.6	61.9
	LWB	38.5	43.7	49.0	54.7	40.6	46.1	51.5	57.2	43.7	49.7	55.2	60.8
105	TCG	42.9	46.8	51.4	55.7	45.7	48.6	53.2	57.4	50.3	51.5	55.6	59.7
	SHG	42.9	38.4	32.9	27.0	45.7	41.8	35.4	28.5	50.3	48.4	40.1	31.2
	TC	41.9	45.8	50.5	54.7	44.5	47.5	52.1	56.3	48.8	50.0	54.1	58.2
	kW	4.98	5.07	5.18	5.26	5.09	5.16	5.27	5.35	5.30	5.32	5.40	5.48
	CMP	4.52	4.62	4.73	4.81	4.59	4.66	4.77	4.85	4.70	4.73	4.81	4.89
	LDB	41.5	45.6	50.6	56.1	45.1	48.1	53.2	58.6	50.9	52.0	57.0	62.3
	LWB	39.4	44.6	49.8	55.4	41.3	47.0	52.2	57.8	44.2	50.3	55.7	61.2
115	TCG	39.8	43.1	47.5	51.8	42.4	44.8	49.3	53.4	46.7	47.5	51.6	55.6
	SHG	39.8	36.1	30.9	25.3	42.4	39.4	33.3	26.7	46.7	45.6	38.0	29.5
	TC	38.9	42.1	46.6	50.9	41.3	43.7	48.2	52.3	45.2	46.0	50.1	54.1
	kW	5.16	5.26	5.38	5.48	5.28	5.35	5.48	5.56	5.49	5.51	5.61	5.70
	CMP	4.73	4.82	4.95	5.05	4.81	4.87	5.00	5.09	4.93	4.95	5.05	5.14
	LDB	43.1	46.6	51.6	56.9	46.6	49.0	53.9	59.3	52.1	52.8	57.5	62.7
	LWB	40.3	45.6	50.8	56.2	42.1	47.8	53.0	58.4	44.8	50.9	56.2	61.6
125	TCG	36.7	39.4	43.5	47.8	39.1	40.9	45.1	49.3	43.0	43.4	47.4	51.3
	SHG	36.7	33.8	28.8	23.6	39.1	36.9	31.1	25.0	43.0	42.6	35.8	27.7
	TC	35.8	38.4	42.6	46.9	38.1	39.8	44.0	48.3	41.6	42.0	46.0	49.9
	kW	5.34	5.42	5.56	5.68	5.45	5.51	5.65	5.76	5.66	5.67	5.80	5.90
	CMP	4.93	5.01	5.15	5.27	5.00	5.06	5.20	5.31	5.13	5.14	5.27	5.37
	LDB	44.8	47.7	52.6	57.8	48.1	50.0	54.8	60.0	53.4	53.7	58.0	63.2
	LWB	41.2	46.7	51.8	57.0	42.9	48.7	53.8	59.2	45.5	51.6	56.8	62.2

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 11* — 53QKB018 IN-CEILING CASSETTE SYSTEM (38HDC018 WITH 40QKB024)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		375/0.03				415/0.03				525/0.05			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	19.0	20.7	22.3	23.3	19.6	21.2	22.4	23.5	21.0	22.0	23.3	23.7
	SHG	18.2	16.1	13.7	11.2	19.3	16.9	14.0	11.3	21.0	18.5	15.2	11.7
	TC	18.6	20.4	22.0	23.0	19.3	20.9	22.1	23.2	20.6	21.6	22.9	23.3
	kW	1.33	1.35	1.36	1.37	1.35	1.36	1.37	1.39	1.39	1.40	1.42	1.42
	CMP	1.05	1.07	1.08	1.09	1.06	1.07	1.08	1.10	1.07	1.08	1.10	1.10
	LDB	37.1	42.2	47.9	54.1	39.1	44.3	50.4	56.2	44.8	49.2	54.8	60.8
	LWB	36.0	41.3	47.0	53.5	37.7	43.1	49.2	55.5	41.2	47.1	52.9	59.4
65	TCG	17.8	19.6	21.3	22.7	18.4	20.1	21.9	23.2	20.1	21.2	22.8	23.7
	SHG	17.4	15.5	13.3	10.9	18.4	16.3	13.8	11.2	20.1	18.3	15.1	11.7
	TC	17.4	19.2	21.0	22.4	18.0	19.7	21.5	22.8	19.7	20.8	22.3	23.2
	kW	1.41	1.44	1.46	1.48	1.43	1.45	1.48	1.49	1.48	1.50	1.52	1.53
	CMP	1.14	1.17	1.18	1.20	1.15	1.17	1.19	1.21	1.17	1.19	1.21	1.22
	LDB	38.3	43.0	48.4	54.2	40.2	44.9	50.3	56.1	45.7	48.9	54.4	60.3
	LWB	37.2	42.2	47.6	53.6	38.7	43.9	49.3	55.4	41.6	47.4	53.0	59.1
75	TCG	16.6	18.2	20.0	21.7	17.3	18.7	20.6	22.1	19.0	19.8	21.5	22.8
	SHG	16.5	14.7	12.6	10.4	17.3	15.5	13.2	10.7	19.0	17.6	14.6	11.4
	TC	16.3	17.9	19.7	21.4	16.9	18.4	20.2	21.8	18.5	19.4	21.1	22.4
	kW	1.47	1.51	1.54	1.57	1.50	1.53	1.56	1.59	1.56	1.58	1.60	1.63
	CMP	1.21	1.24	1.28	1.31	1.22	1.25	1.29	1.31	1.26	1.27	1.30	1.33
	LDB	39.9	44.2	49.3	54.8	42.0	46.0	51.1	56.6	47.1	49.6	54.8	60.5
	LWB	38.3	43.4	48.6	54.3	39.7	45.0	50.2	56.0	42.4	48.2	53.6	59.4
85	TCG	15.5	16.9	18.8	20.7	16.2	17.4	19.3	21.1	17.8	18.4	20.2	21.9
	SHG	15.5	13.9	12.0	9.98	16.2	14.7	12.6	10.3	17.8	16.8	14.1	11.1
	TC	15.2	16.6	18.5	20.3	15.8	17.0	18.9	20.7	17.3	18.0	19.8	21.5
	kW	1.54	1.58	1.62	1.66	1.57	1.60	1.65	1.68	1.64	1.65	1.69	1.72
	CMP	1.28	1.32	1.37	1.41	1.30	1.33	1.38	1.41	1.34	1.36	1.40	1.43
	LDB	41.5	45.5	50.3	55.5	43.7	47.0	51.9	57.2	48.6	50.3	55.3	60.6
	LWB	39.4	44.7	49.6	54.9	40.6	46.1	51.1	56.5	43.1	49.1	54.2	59.7
95	TCG	14.5	15.6	17.3	19.2	15.1	16.0	17.8	19.7	16.6	16.9	18.7	20.6
	SHG	14.5	13.2	11.3	9.38	15.1	13.9	11.9	9.74	16.6	15.9	13.4	10.6
	TC	14.2	15.3	17.0	18.9	14.8	15.7	17.4	19.4	16.1	16.5	18.3	20.1
	kW	1.59	1.63	1.68	1.74	1.62	1.65	1.70	1.76	1.69	1.71	1.76	1.81
	CMP	1.34	1.38	1.43	1.49	1.36	1.39	1.45	1.50	1.41	1.42	1.47	1.52
	LDB	43.3	46.7	51.5	56.5	45.5	48.2	53.0	58.0	50.2	51.3	56.0	61.1
	LWB	40.4	45.9	50.8	55.9	41.5	47.2	52.2	57.3	43.9	50.0	55.1	60.3
105	TCG	13.5	14.3	15.9	17.7	14.0	14.7	16.3	18.2	15.4	15.5	17.1	19.0
	SHG	13.5	12.4	10.6	8.75	14.0	13.2	11.2	9.12	15.4	15.1	12.6	10.0
	TC	13.2	14.0	15.6	17.4	13.7	14.3	16.0	17.8	15.0	15.1	16.7	18.6
	kW	1.63	1.67	1.73	1.79	1.67	1.69	1.75	1.82	1.74	1.75	1.81	1.87
	CMP	1.39	1.43	1.49	1.55	1.41	1.44	1.50	1.57	1.46	1.47	1.53	1.60
	LDB	45.2	47.9	52.7	57.7	47.3	49.3	54.1	59.0	51.8	52.3	57.0	61.8
	LWB	41.4	47.1	52.0	57.0	42.4	48.3	53.3	58.4	44.7	50.8	55.9	61.0
115	TCG	12.5	13.1	14.6	16.3	13.0	13.4	14.9	16.6	14.2	14.3	15.6	17.4
	SHG	12.5	11.7	9.98	8.16	13.0	12.5	10.5	8.50	14.2	14.1	11.9	9.40
	TC	12.2	12.8	14.3	16.0	12.7	13.1	14.6	16.3	13.8	13.9	15.2	17.0
	kW	1.66	1.69	1.76	1.83	1.70	1.71	1.78	1.85	1.77	1.78	1.84	1.91
	CMP	1.43	1.46	1.52	1.59	1.45	1.47	1.54	1.61	1.51	1.51	1.57	1.64
	LDB	47.2	49.2	53.9	58.8	49.1	50.5	55.2	60.1	53.5	53.7	57.8	62.7
	LWB	42.4	48.2	53.2	58.2	43.4	49.4	54.4	59.4	45.5	51.6	56.8	61.9
125	TCG	11.5	11.8	13.2	14.8	12.0	12.1	13.5	15.1	13.0	13.1	14.1	15.8
	SHG	11.5	11.0	9.33	7.56	12.0	11.7	9.85	7.89	13.0	13.1	11.2	8.76
	TC	11.2	11.5	12.9	14.5	11.7	11.8	13.2	14.8	12.7	12.7	13.7	15.4
	kW	1.69	1.71	1.79	1.86	1.73	1.74	1.81	1.89	1.81	1.81	1.86	1.94
	CMP	1.47	1.49	1.56	1.64	1.49	1.50	1.57	1.65	1.55	1.55	1.60	1.68
	LDB	49.2	50.4	55.1	60.0	51.0	51.6	56.3	61.1	55.1	55.1	58.7	63.6
	LWB	43.4	49.4	54.3	59.3	44.3	50.5	55.4	60.4	46.3	52.4	57.7	62.7

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 12* — 53QKB024 IN-CEILING CASSETTE SYSTEM (38HDC024 WITH 40QKB036)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		635/0.08				745/0.10				915/0.12			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	26.7	28.5	30.1	31.7	28.0	29.2	30.9	32.1	29.4	29.9	31.8	33.0
	SHG	26.7	23.7	19.4	15.5	28.0	25.3	20.6	16.0	29.4	27.3	22.1	16.8
	TC	26.3	28.0	29.6	31.2	27.4	28.7	30.4	31.6	28.8	29.2	31.2	32.3
	kW	2.14	2.15	2.16	2.18	2.18	2.19	2.20	2.21	2.24	2.24	2.26	2.27
	CMP	1.71	1.72	1.73	1.75	1.72	1.73	1.74	1.75	1.73	1.73	1.75	1.76
	LDB	45.2	49.1	54.9	60.0	49.0	52.0	57.3	62.5	53.5	55.5	60.3	65.1
	LWB	41.3	47.0	52.9	58.8	43.3	49.2	54.9	60.9	45.5	51.6	57.1	62.9
65	TCG	25.2	26.7	29.0	30.4	26.5	27.5	29.7	31.1	27.9	28.4	30.3	31.9
	SHG	25.2	22.6	19.0	15.0	26.5	24.4	20.2	15.6	27.9	26.7	21.6	16.5
	TC	24.8	26.2	28.6	30.0	26.0	27.0	29.2	30.6	27.3	27.7	29.6	31.3
	kW	2.16	2.16	2.18	2.19	2.19	2.20	2.22	2.23	2.25	2.25	2.27	2.29
	CMP	1.76	1.77	1.79	1.80	1.77	1.78	1.80	1.81	1.78	1.78	1.80	1.82
	LDB	45.8	49.3	54.3	59.9	49.5	51.9	56.8	62.2	53.9	55.0	59.9	64.8
	LWB	41.7	47.4	52.8	58.8	43.5	49.5	54.9	60.8	45.7	51.7	57.2	62.8
75	TCG	23.5	24.8	27.1	28.7	24.8	25.6	27.8	29.4	26.2	26.5	28.4	30.3
	SHG	23.5	21.5	18.0	14.2	24.8	23.2	19.2	14.9	26.2	25.5	20.8	15.9
	TC	23.1	24.4	26.7	28.3	24.3	25.1	27.3	28.9	25.6	25.9	27.8	29.7
	kW	2.15	2.16	2.18	2.19	2.19	2.19	2.21	2.23	2.24	2.24	2.26	2.28
	CMP	1.79	1.80	1.82	1.83	1.80	1.81	1.83	1.84	1.81	1.82	1.83	1.85
	LDB	46.8	49.7	54.7	60.1	50.2	52.1	57.0	62.3	54.5	55.1	59.9	64.7
	LWB	42.2	47.9	53.3	59.1	43.9	49.9	55.2	60.9	46.0	52.0	57.4	62.9
85	TCG	21.9	23.0	25.1	27.0	23.1	23.7	25.8	27.8	24.5	24.7	26.6	28.6
	SHG	21.9	20.3	17.0	13.5	23.1	22.0	18.2	14.3	24.5	24.3	19.9	15.3
	TC	21.5	22.6	24.7	26.6	22.6	23.3	25.4	27.3	23.9	24.1	26.0	28.0
	kW	2.14	2.16	2.17	2.19	2.18	2.18	2.20	2.22	2.22	2.23	2.24	2.27
	CMP	1.82	1.83	1.85	1.87	1.84	1.84	1.86	1.88	1.84	1.85	1.86	1.89
	LDB	47.7	50.1	55.1	60.3	51.0	52.4	57.2	62.3	55.1	55.3	59.8	64.6
	LWB	42.7	48.4	53.7	59.3	44.3	50.3	55.6	61.1	46.3	52.3	57.7	63.1
95	TCG	20.2	21.1	23.2	25.1	21.4	21.8	23.8	25.8	22.7	22.8	24.5	26.6
	SHG	20.2	19.0	16.0	12.7	21.4	20.7	17.1	13.4	22.7	22.7	18.9	14.5
	TC	19.9	20.7	22.8	24.7	20.9	21.3	23.4	25.3	22.2	22.2	24.0	26.0
	kW	2.10	2.11	2.13	2.15	2.13	2.14	2.16	2.18	2.18	2.18	2.20	2.23
	CMP	1.82	1.83	1.85	1.87	1.83	1.84	1.85	1.88	1.85	1.85	1.86	1.89
	LDB	48.8	50.7	55.5	60.7	52.0	52.9	57.6	62.6	55.8	55.8	60.0	64.8
	LWB	43.2	49.0	54.2	59.7	44.8	50.8	56.0	61.5	46.6	52.7	58.0	63.3
105	TCG	18.6	19.3	21.3	23.2	19.7	19.9	21.9	23.8	20.9	20.9	22.5	24.5
	SHG	18.6	17.7	14.9	11.9	19.7	19.3	16.1	12.5	20.9	20.9	17.7	13.6
	TC	18.3	18.9	20.9	22.9	19.3	19.5	21.4	23.3	20.4	20.4	22.0	24.0
	kW	2.03	2.04	2.07	2.09	2.06	2.07	2.09	2.11	2.11	2.11	2.12	2.15
	CMP	1.78	1.79	1.82	1.84	1.80	1.80	1.83	1.84	1.81	1.81	1.83	1.86
	LDB	49.8	51.4	56.0	61.0	52.9	53.5	58.0	63.0	56.6	56.6	60.3	65.0
	LWB	43.7	49.7	54.8	60.1	45.2	51.3	56.5	61.8	47.0	53.1	58.4	63.7
115	TCG	17.1	17.6	19.4	21.3	18.1	18.2	19.9	21.8	19.2	19.2	20.5	22.4
	SHG	17.1	16.5	13.8	11.0	18.1	17.9	15.0	11.7	19.2	19.2	16.6	12.7
	TC	16.8	17.3	19.1	21.0	17.7	17.8	19.5	21.4	18.7	18.7	20.0	21.9
	kW	1.89	1.90	1.93	1.96	1.93	1.93	1.95	1.98	1.97	1.97	1.99	2.01
	CMP	1.68	1.69	1.72	1.75	1.70	1.70	1.73	1.75	1.72	1.72	1.74	1.76
	LDB	50.9	52.0	56.7	61.5	53.9	54.2	58.5	63.4	57.5	57.5	60.7	65.4
	LWB	44.2	50.3	55.4	60.6	45.7	51.8	57.0	62.3	47.4	53.4	58.8	64.0
125	TCG	15.6	15.9	17.5	19.4	16.5	16.5	18.0	19.8	17.5	17.5	18.5	20.4
	SHG	15.6	15.3	12.8	10.1	16.5	16.5	13.8	10.8	17.5	17.5	15.4	11.8
	TC	15.3	15.6	17.2	19.0	16.1	16.1	17.6	19.4	17.0	17.0	18.1	19.9
	kW	1.76	1.77	1.80	1.83	1.79	1.79	1.82	1.84	1.83	1.83	1.85	1.87
	CMP	1.59	1.59	1.62	1.65	1.60	1.60	1.63	1.66	1.62	1.62	1.64	1.67
	LDB	52.0	52.7	57.3	62.1	54.9	54.9	59.0	63.8	58.4	58.4	61.1	65.7
	LWB	44.8	50.9	56.0	61.2	46.2	52.3	57.5	62.7	47.8	53.8	59.2	64.4

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

COOLING CAPACITIES (cont)

SYSTEM 13* — 53QKB030 IN-CEILING CASSETTE SYSTEM (38HDC030 WITH 40QKB036)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		635/0.08				745/0.10				915/0.12			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	33.1	35.7	38.1	39.2	34.6	36.8	38.8	39.4	36.5	37.7	39.0	40.2
	SHG	32.7	28.6	24.0	19.0	34.6	30.5	25.0	19.3	36.5	32.8	26.0	20.1
	TC	32.6	35.2	37.6	38.7	34.0	36.2	38.2	38.8	35.8	36.9	38.3	39.5
	kW	2.10	2.13	2.15	2.16	2.14	2.16	2.18	2.19	2.19	2.21	2.22	2.24
	CMP	1.77	1.79	1.81	1.83	1.78	1.80	1.82	1.83	1.80	1.81	1.82	1.84
	LDB	41.5	46.4	52.0	57.9	45.3	49.5	55.1	60.9	50.3	53.3	59.1	63.9
	LWB	39.2	44.6	50.5	57.0	41.4	47.1	53.0	59.5	44.0	49.9	55.9	61.9
65	TCG	30.8	33.4	36.0	38.1	32.6	34.5	37.0	38.7	34.5	35.7	38.0	39.1
	SHG	30.7	27.1	22.8	18.5	32.6	29.2	24.2	19.1	34.5	31.9	25.9	19.7
	TC	30.3	33.0	35.5	37.6	32.0	34.0	36.5	38.1	33.8	35.0	37.3	38.4
	kW	2.28	2.31	2.34	2.36	2.33	2.34	2.37	2.40	2.38	2.39	2.43	2.44
	CMP	1.95	1.98	2.01	2.03	1.98	1.99	2.02	2.04	1.99	2.00	2.03	2.05
	LDB	42.2	46.6	52.0	57.5	45.8	49.5	54.8	60.3	50.6	52.9	58.1	63.5
	LWB	39.7	45.0	50.7	56.7	41.7	47.4	53.0	59.1	44.1	50.0	55.6	61.7
75	TCG	28.6	30.9	33.6	36.0	30.3	32.0	34.6	36.6	32.2	33.2	35.6	37.4
	SHG	28.5	25.4	21.6	17.5	30.3	27.5	22.9	18.2	32.2	30.3	24.7	19.1
	TC	28.1	30.5	33.2	35.5	29.7	31.5	34.1	36.1	31.6	32.5	35.0	36.7
	kW	2.48	2.52	2.56	2.59	2.54	2.56	2.59	2.63	2.60	2.62	2.65	2.68
	CMP	2.16	2.19	2.23	2.27	2.19	2.21	2.25	2.28	2.21	2.23	2.26	2.29
	LDB	43.2	47.2	52.3	57.7	46.8	49.9	55.0	60.3	51.3	53.0	58.1	63.2
	LWB	40.3	45.7	51.1	56.9	42.2	47.9	53.3	59.2	44.4	50.4	55.9	61.6
85	TCG	26.3	28.4	31.2	33.8	27.9	29.5	32.2	34.6	29.9	30.7	33.2	35.6
	SHG	26.3	23.7	20.3	16.5	27.9	25.8	21.6	17.3	29.9	28.6	23.5	18.4
	TC	25.9	28.0	30.8	33.4	27.4	29.0	31.7	34.1	29.3	30.1	32.6	35.0
	kW	2.68	2.73	2.78	2.82	2.74	2.77	2.82	2.85	2.82	2.84	2.87	2.91
	CMP	2.36	2.41	2.46	2.50	2.40	2.43	2.47	2.51	2.44	2.45	2.49	2.53
	LDB	44.3	47.8	52.6	57.8	47.8	50.3	55.1	60.3	51.9	53.2	58.1	63.0
	LWB	40.9	46.3	51.5	57.0	42.7	48.4	53.7	59.3	44.8	50.7	56.1	61.6
95	TCG	24.2	25.9	28.6	31.3	25.6	26.9	29.6	32.1	27.4	28.0	30.6	33.0
	SHG	24.2	22.0	18.8	15.3	25.6	23.9	20.2	16.2	27.4	26.6	22.1	17.2
	TC	23.8	25.5	28.2	30.8	25.1	26.4	29.1	31.7	26.8	27.4	30.0	32.4
	kW	2.92	2.96	3.03	3.08	2.98	3.01	3.07	3.12	3.06	3.07	3.12	3.17
	CMP	2.60	2.64	2.71	2.76	2.64	2.67	2.73	2.78	2.68	2.69	2.75	2.79
	LDB	45.4	48.5	53.3	58.3	48.8	50.9	55.6	60.5	52.9	53.7	58.3	63.2
	LWB	41.4	47.0	52.1	57.5	43.2	49.0	54.2	59.6	45.2	51.2	56.4	61.9
105	TCG	22.1	23.5	25.9	28.6	23.4	24.3	26.8	29.4	25.1	25.4	27.8	30.2
	SHG	22.1	20.3	17.3	14.1	23.4	22.1	18.6	14.9	25.1	24.6	20.5	16.0
	TC	21.8	23.1	25.6	28.2	23.0	23.9	26.4	28.9	24.5	24.8	27.2	29.7
	kW	3.18	3.22	3.29	3.36	3.24	3.26	3.34	3.40	3.32	3.33	3.40	3.45
	CMP	2.87	2.91	2.98	3.05	2.90	2.93	3.00	3.06	2.95	2.96	3.03	3.08
	LDB	46.5	49.3	54.0	58.8	49.8	51.6	56.2	61.0	53.8	54.3	58.7	63.5
	LWB	42.0	47.7	52.8	58.0	43.7	49.6	54.8	60.0	45.7	51.7	56.9	62.2
115	TCG	20.2	21.3	23.5	25.9	21.4	22.0	24.2	26.6	22.8	23.0	25.1	27.4
	SHG	20.2	18.8	15.9	12.9	21.4	20.4	17.1	13.7	22.8	22.6	18.9	14.8
	TC	19.8	20.9	23.1	25.5	21.0	21.6	23.8	26.2	22.3	22.4	24.6	26.9
	kW	3.49	3.53	3.59	3.68	3.55	3.57	3.64	3.72	3.63	3.64	3.71	3.78
	CMP	3.19	3.22	3.29	3.37	3.22	3.24	3.31	3.39	3.27	3.27	3.34	3.41
	LDB	47.7	50.0	54.7	59.5	50.9	52.2	56.8	61.6	54.8	55.1	59.2	63.9
	LWB	42.6	48.4	53.5	58.7	44.2	50.2	55.4	60.6	46.1	52.2	57.4	62.7
125	TCG	18.3	19.1	21.0	23.2	19.3	19.7	21.7	23.9	20.6	20.6	22.4	24.7
	SHG	18.3	17.2	14.5	11.7	19.3	18.7	15.6	12.4	20.6	20.6	17.3	13.5
	TC	17.9	18.7	20.7	22.9	18.9	19.3	21.3	23.5	20.1	20.1	21.9	24.2
	kW	3.81	3.83	3.90	3.99	3.86	3.88	3.95	4.04	3.94	3.94	4.01	4.11
	CMP	3.50	3.53	3.60	3.69	3.54	3.55	3.63	3.71	3.58	3.58	3.65	3.75
	LDB	48.8	50.7	55.4	60.2	52.0	52.9	57.4	62.2	55.8	55.8	59.7	64.3
	LWB	43.2	49.1	54.2	59.4	44.8	50.8	56.0	61.2	46.6	52.7	57.9	63.1

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Performance data (cont)

COOLING CAPACITIES (cont)

SYSTEM 14* — 53QKB036 IN-CEILING CASSETTE SYSTEM (38HDC036 WITH 40QKB036)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		635/0.02				745/0.03				915/0.04			
		Air Entering Evaporator — Ewb (F)											
		57	62	67	72	57	62	67	72	57	62	67	72
55	TCG	37.5	39.3	40.8	41.7	38.9	40.6	41.8	42.6	40.1	41.3	42.5	43.7
	SHG	35.9	30.6	25.3	20.2	38.4	32.7	26.4	20.8	40.1	34.8	27.7	21.7
	TC	37.0	38.8	40.3	41.2	38.3	40.1	41.3	42.0	39.4	40.6	41.8	43.0
	kW	2.08	2.10	2.12	2.13	2.12	2.14	2.16	2.17	2.17	2.18	2.20	2.22
	CMP	1.77	1.79	1.81	1.82	1.78	1.80	1.82	1.83	1.80	1.81	1.83	1.84
	LDB	37.6	44.0	50.3	56.4	41.3	47.2	53.6	59.3	47.3	51.7	57.6	62.6
	LWB	36.2	42.5	48.9	55.8	39.1	45.2	51.7	58.2	42.4	48.6	54.7	60.8
65	TCG	35.1	37.4	39.0	40.9	36.5	38.4	39.6	41.1	38.2	39.1	40.2	41.4
	SHG	33.9	29.4	24.3	19.7	36.4	31.3	25.2	20.1	38.2	33.5	26.5	20.6
	TC	34.6	36.9	38.6	40.4	36.0	37.8	39.0	40.6	37.5	38.4	39.5	40.7
	kW	2.28	2.31	2.33	2.36	2.32	2.34	2.36	2.38	2.37	2.39	2.40	2.42
	CMP	1.97	2.00	2.02	2.05	1.99	2.01	2.03	2.05	2.01	2.02	2.04	2.06
	LDB	37.9	43.6	50.0	55.7	41.5	47.0	53.5	59.0	47.3	51.3	57.4	62.6
	LWB	36.7	42.4	48.8	55.1	39.4	45.3	51.8	58.0	42.4	48.6	54.8	60.9
75	TCG	32.6	34.9	36.8	38.6	34.1	35.9	37.5	39.2	35.8	36.5	38.2	39.4
	SHG	31.9	27.7	23.1	18.7	34.0	29.6	24.2	19.2	35.8	31.9	25.7	19.8
	TC	32.1	34.5	36.3	38.2	33.5	35.4	36.9	38.6	35.1	35.8	37.6	38.8
	kW	2.51	2.54	2.56	2.60	2.55	2.57	2.60	2.63	2.60	2.61	2.64	2.67
	CMP	2.21	2.24	2.26	2.30	2.23	2.25	2.28	2.31	2.25	2.26	2.29	2.31
	LDB	38.3	43.8	50.0	55.8	42.1	47.0	53.2	58.9	47.7	51.2	56.9	62.4
	LWB	37.2	42.8	49.0	55.2	39.7	45.6	51.8	57.9	42.6	48.9	54.8	60.8
85	TCG	30.1	32.5	34.5	36.4	31.6	33.4	35.4	37.2	33.4	33.9	36.2	37.4
	SHG	29.9	26.1	21.8	17.6	31.6	28.0	23.1	18.3	33.4	30.2	24.8	19.0
	TC	29.7	32.0	34.0	36.0	31.1	32.9	34.9	36.7	32.8	33.3	35.6	36.8
	kW	2.74	2.76	2.80	2.83	2.77	2.80	2.83	2.87	2.83	2.84	2.88	2.91
	CMP	2.45	2.47	2.51	2.54	2.46	2.49	2.52	2.56	2.49	2.49	2.54	2.57
	LDB	38.7	44.0	50.0	55.9	42.8	47.1	53.0	58.7	48.1	51.2	56.4	62.1
	LWB	37.7	43.2	49.2	55.3	40.1	45.9	51.8	57.9	42.8	49.2	54.7	60.8
95	TCG	27.4	29.6	31.6	33.4	29.0	30.7	32.6	33.9	30.7	31.6	33.6	34.5
	SHG	27.4	24.1	20.2	16.2	29.0	26.1	21.6	16.8	30.7	28.8	23.4	17.7
	TC	27.0	29.2	31.2	33.0	28.6	30.2	32.1	33.4	30.1	31.0	33.0	33.9
	kW	2.98	3.01	3.05	3.09	3.02	3.05	3.09	3.12	3.08	3.10	3.14	3.17
	CMP	2.70	2.73	2.76	2.80	2.72	2.75	2.78	2.81	2.74	2.76	2.81	2.83
	LDB	39.8	44.7	50.5	56.4	43.8	47.4	53.2	59.2	48.9	50.8	56.4	62.3
	LWB	38.5	43.9	49.7	55.8	40.6	46.4	52.2	58.4	43.2	49.3	54.9	61.1
105	TCG	24.8	26.7	28.7	30.4	26.4	27.7	29.7	31.0	28.1	28.7	30.6	31.6
	SHG	24.8	22.1	18.6	14.8	26.4	24.1	19.9	15.5	28.1	26.8	21.8	16.4
	TC	24.4	26.3	28.4	30.0	25.9	27.3	29.3	30.6	27.6	28.2	30.1	31.0
	kW	3.24	3.26	3.31	3.35	3.28	3.31	3.35	3.39	3.35	3.36	3.41	3.43
	CMP	2.97	2.99	3.03	3.07	2.98	3.01	3.06	3.09	3.02	3.03	3.08	3.11
	LDB	41.2	45.5	51.1	57.1	45.0	48.0	53.6	59.6	49.7	51.1	56.6	62.6
	LWB	39.3	44.8	50.4	56.5	41.2	47.1	52.7	58.8	43.6	49.8	55.3	61.4
115	TCG	22.3	23.9	26.0	27.3	23.7	24.7	26.6	27.9	25.4	25.7	27.6	28.6
	SHG	22.3	20.2	17.0	13.5	23.7	22.0	18.2	14.1	25.4	24.6	20.1	15.1
	TC	21.9	23.5	25.6	27.0	23.3	24.3	26.2	27.5	24.9	25.2	27.1	28.1
	kW	3.51	3.53	3.58	3.62	3.55	3.57	3.62	3.66	3.62	3.63	3.68	3.71
	CMP	3.24	3.26	3.31	3.35	3.26	3.28	3.33	3.37	3.30	3.31	3.36	3.39
	LDB	42.8	46.3	51.7	57.8	46.3	48.8	54.3	60.2	50.7	51.6	57.0	62.8
	LWB	40.1	45.7	51.1	57.2	41.9	47.9	53.4	59.4	44.2	50.3	55.8	61.8
125	TCG	19.9	21.0	22.7	24.5	21.1	21.8	23.7	25.0	22.7	22.7	24.5	25.7
	SHG	19.9	18.2	15.2	12.2	21.1	20.0	16.5	12.8	22.7	22.3	18.3	13.8
	TC	19.6	20.7	22.4	24.2	20.7	21.4	23.3	24.6	22.2	22.3	24.0	25.2
	kW	3.75	3.79	3.83	3.90	3.82	3.84	3.89	3.94	3.90	3.90	3.96	4.00
	CMP	3.49	3.53	3.57	3.64	3.54	3.56	3.61	3.66	3.59	3.59	3.65	3.69
	LDB	44.3	47.4	52.9	58.4	47.8	49.6	54.9	60.7	51.9	52.3	57.4	63.2
	LWB	40.9	46.7	52.2	57.8	42.7	48.7	54.1	59.9	44.7	51.0	56.4	62.2

Rating condition.

Not recommended for long-term operation.

LEGEND

BF — Bypass Factor
CMP — Compressor
Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Total Power
LDB — Leaving Dry Bulb
LWB — Leaving Wet Bulb
SHG — Gross Sensible Capacity (1000 Btu/hour)
TC — Total Net Cooling Capacity (1000 Btu/hour)
TCG — Gross Cooling Capacity (1000 Btu/hour)

*Refer to Systems Index Table on page 26.

NOTES:
1. Direct interpolation is permissible. Do not extrapolate.
2. The SHG is based on 80 F edb temperature of air entering indoor coil.
   Below 80 F edb, subtract (corr factor x cfm) from SHG.
   Above 80 F edb, add (corr factor x cfm) to SHG.
   Correction Factor = 1.10 x (1 – BF) x (edb – 80).

Electrical data

38HDC CONDENSING UNITS

UNIT SIZE 38HDC	V-PH-Hz	OPERATING VOLTAGE MINIMUM*	OPERATING VOLTAGE MAXIMUM*	COMP RLA	COMP FLA	FAN FLA	POWER		
							MCA	MOCP	FLA
018	208/230-1-60	187	254	8.0	49.0	0.7	10.7	15	8.70
024				12.9	62.5	0.7	16.8	25	13.60
030				15.0	76.0	0.7	19.5	30	15.70
036	208/230-1-60	187	254	17.9	88.0	0.7	23.1	40	18.60
	208/230-3-60	187	254	11.4	77.0	0.7	15.0	25	12.10
	460-3-60	414	508	5.7	38.5	0.4	7.5	15	6.10
048	208/230-1-60	187	254	26.4	129.0	1.45	34.5	60	27.85
	208/230-3-60	187	254	15.0	99.0	1.45	20.2	35	16.45
	460-3-60	414	508	8.2	49.5	0.8	11.1	15	9.00
060	208/230-1-60	187	254	28.9	165.0	1.45	36.6	60	30.35
	208/230-3-60	187	254	16.0	125.0	1.45	21.5	35	17.45
	460-3-60	414	508	8.0	62.5	0.8	10.8	15	8.80

38AN CONDENSING UNITS†

UNIT 38AN	V-PH-Hz	OPERATING VOLTAGE MINIMUM*	OPERATING VOLTAGE MAXIMUM*	COMP RLA	COMP LRA	FAN FLA	POWER		
							MCA**	MOCP**	FLA
009	115-1-60	104	127	7.6	46.5	0.76	12.1	15	12.86
012	208/230-1-60	187	253	5.5	30.0	0.35	8.5	15	8.85

FAN COIL UNITS

UNIT	V-PH-Hz	OPERATING VOLTAGE MINIMUM*	OPERATING VOLTAGE MAXIMUM*	FAN		POWER			MIN WIRE SIZE
				FLA	MOTOR POWER	MCA	MOCP	FLA	
40QNB009	115-1-60	104	127	0.41	34 W	††	††	0.41	14
40QNB012	208/230-1-60	187	253	0.23	35 W	††	††	0.23	14
40QNB018	208/230-1-60	187	253	0.53	44 W	0.66	15	0.53	14
40QNB024	208/230-1-60	187	253	0.53	49 W	0.66	15	0.53	14
40QAB018,024‖	208/230-1-60	187	253	0.50	1/16 hp	0.63	15	0.50	14
40QAB036	208/230-1-60	187	253	1.30	1/6 hp	1.60	15	1.30	14
40QAB048	208/230-1-60	187	253	1.10 0.50	1/6 hp 1/16 hp	2.00	15	1.60	14
40QAB060	208/230-1-60	187	253	1.30 1.30	1/6 hp 1/6 hp	3.30	15	2.60	14
40QKB024	208/230-1-60	187	253	0.44	1/16 hp	0.55	15	0.44	14
40QKB036	208/230-1-60	187	253	0.44 0.44	1/16 hp 1/16 hp	1.10	15	0.88	14

LEGEND

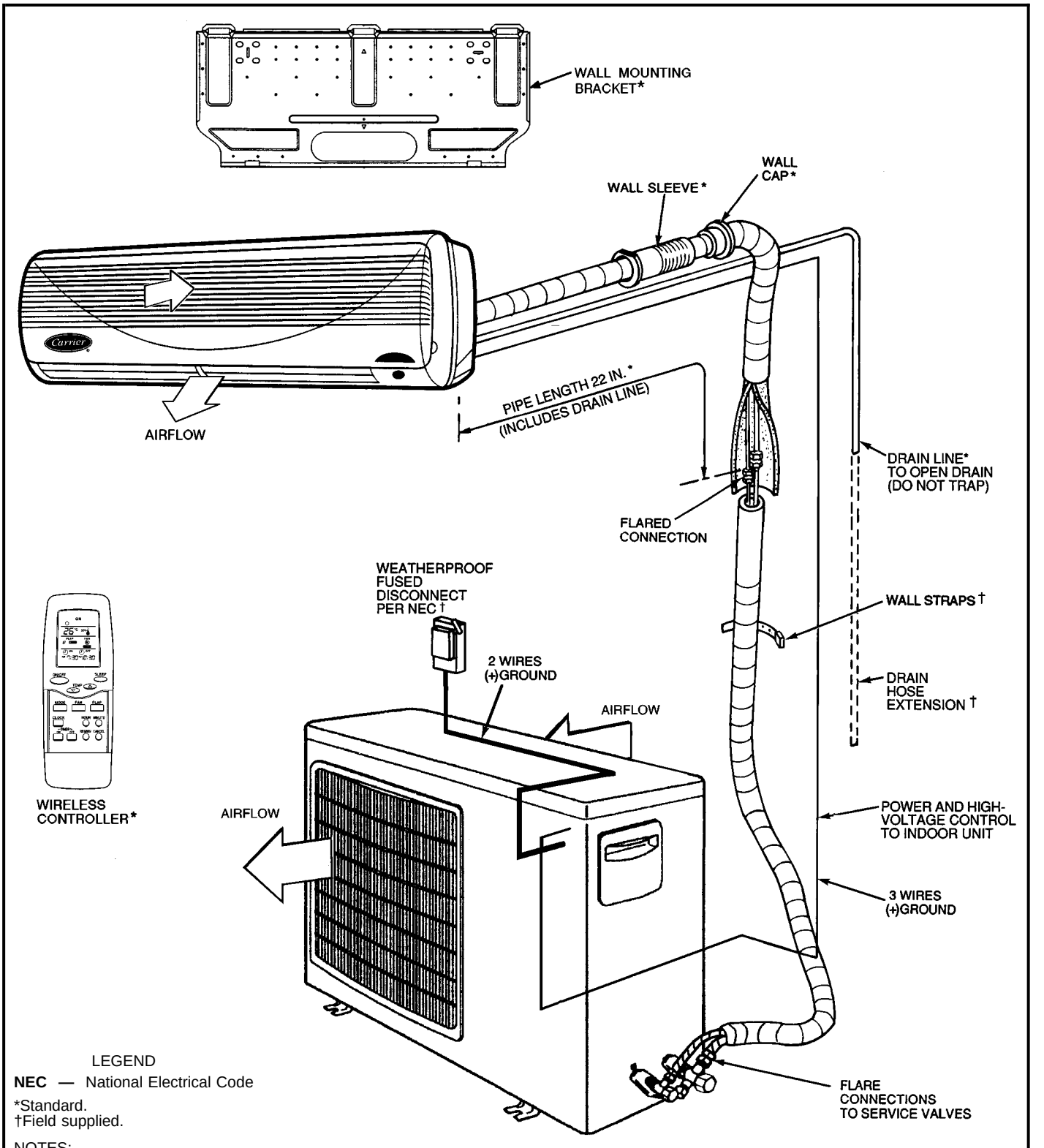
COMP — Compressor
FLA — Full Load Amps
HACR — Heating, Air Conditioning, and Refrigeration
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection Amps (Fuse or HACR Circuit Breaker)
RLA — Rated Load Amps

*Permissible limits of the voltage range at which units will operate satisfactorily.

†These units can only be used with 40QNB high wall fan coil units.
**MCA and MOCP are for both indoor and outdoor units.
††Indoor fan coil must be connected to outdoor unit. See outdoor unit for required data.
‖ The 40QAB018 fan coil is a 40QAB024 fan coil, but uses a different motor speed fan tap plug than the 40QAB024. Electrical data is identical for both units.

NOTE: Refer to 53 Series Heat Pump Product Data literature for electrical data for heat pump fan coils matched with cooling-only condensing units.

Typical piping and wiring — high wall systems, 9,000 and 12,000 Btuh



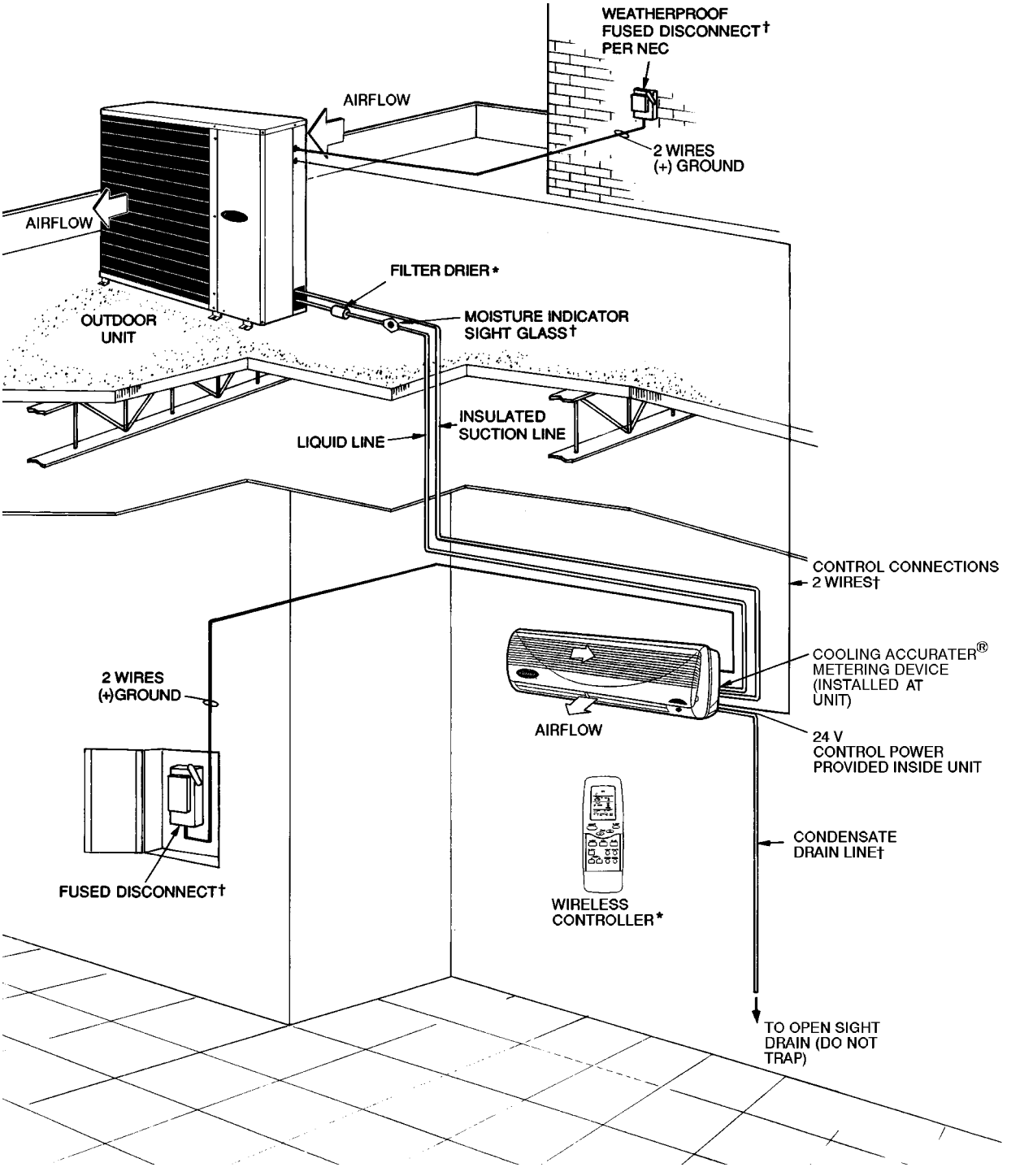
LEGEND

NEC — National Electrical Code

*Standard.
†Field supplied.

NOTES:
1. All piping must follow standard refrigerant techniques. Refer to Carrier System Design Manual for details.
2. Do not install a filter drier in mixed phase liquid line.
3. All wiring must comply with applicable local and national codes.
4. Capillary tube expansion device (cooling-only systems only) is located in the outdoor unit. Both refrigerant lines must be insulated.
5. Wiring and piping shown are general points-of-connection guides only and are not intended to include all details for a specific installation.
6. Insulate condensate line drain if installed in a conditioned space.

Typical piping and wiring — high-wall systems, 18,000 and 24,000 Btuh



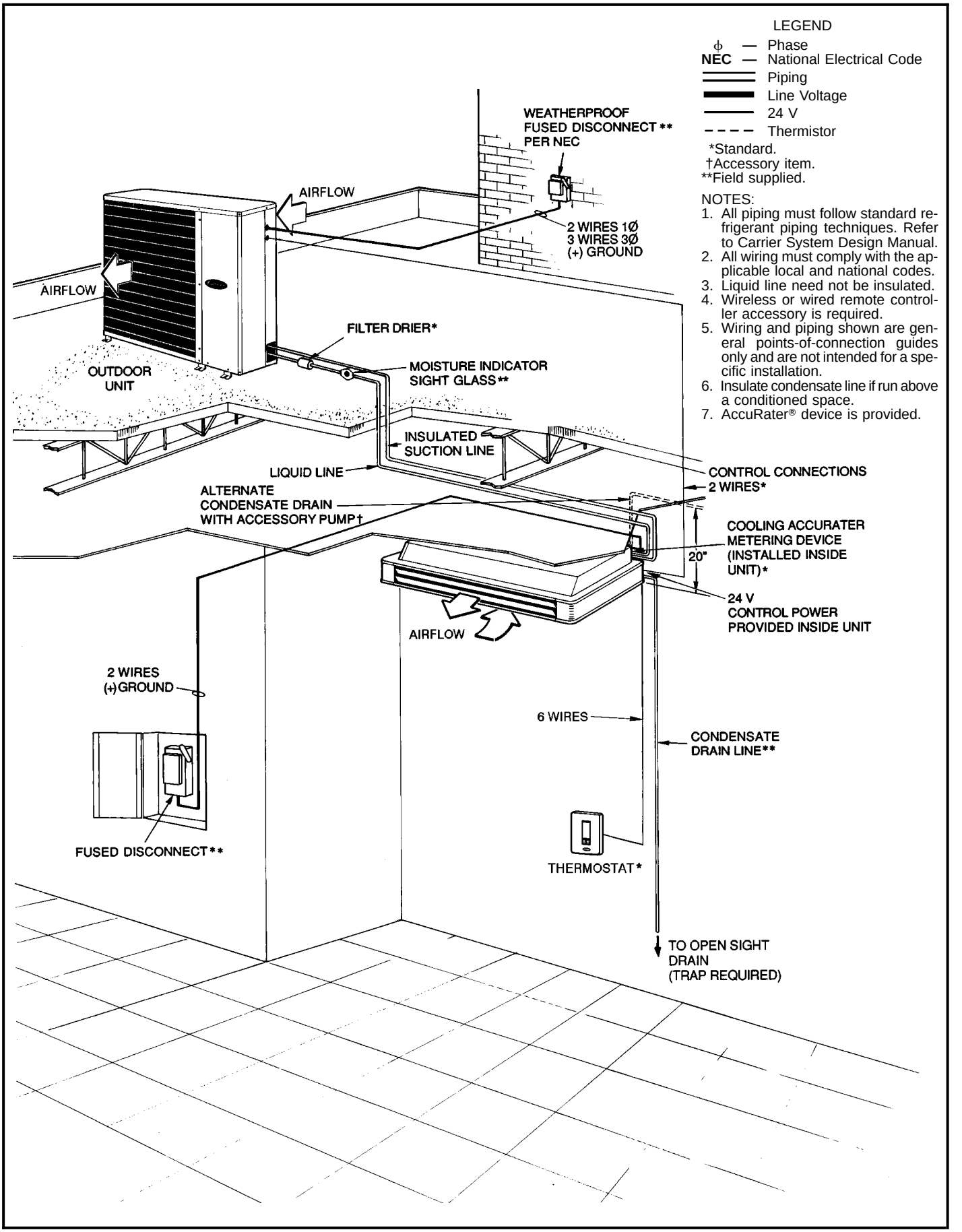
LEGEND

NEC — National Electrical Code
Piping
Line Voltage
24 V
Thermistor

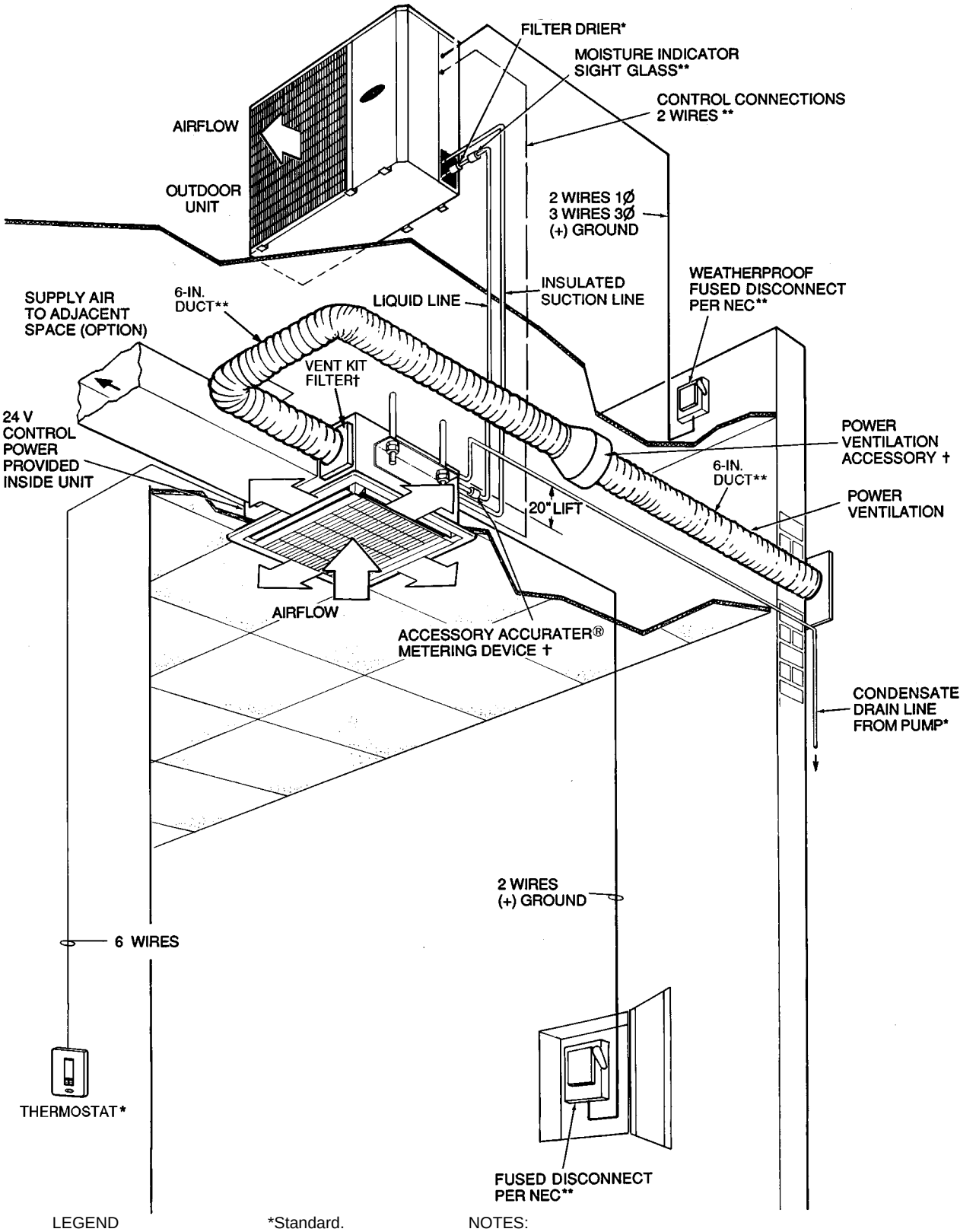
*Standard.
†Field supplied.

NOTES:
1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual.
2. All wiring must comply with the applicable local and national codes.
3. Liquid line need not be insulated.
4. Wiring and piping shown are general points-of-connection guides only and are not intended for a specific installation.
5. Insulate condensate drain if installed in a conditioned space.

Typical piping and wiring — ceiling-suspended systems


LEGEND
ϕ — Phase
NEC — National Electrical Code
Piping
Line Voltage
24 V
Thermistor
*Standard.
†Accessory item.
**Field supplied.
NOTES:
1. All piping must follow standard refrigerant piping techniques. Refer to Carrier System Design Manual.
2. All wiring must comply with the applicable local and national codes.
3. Liquid line need not be insulated.
4. Wireless or wired remote controller accessory is required.
5. Wiring and piping shown are general points-of-connection guides only and are not intended for a specific installation.
6. Insulate condensate line if run above a conditioned space.
7. AccuRater® device is provided.
WEATHERPROOF FUSED DISCONNECT** PER NEC
AIRFLOW
2 WIRES 1Ø 3 WIRES 3Ø (+) GROUND
AIRFLOW
FILTER DRIER*
OUTDOOR UNIT
MOISTURE INDICATOR SIGHT GLASS**
INSULATED SUCTION LINE
LIQUID LINE
CONTROL CONNECTIONS 2 WIRES*
ALTERNATE CONDENSATE DRAIN WITH ACCESSORY PUMP†
COOLING ACCURATER METERING DEVICE (INSTALLED INSIDE UNIT)*
20"
24 V CONTROL POWER PROVIDED INSIDE UNIT
AIRFLOW
2 WIRES (+) GROUND
6 WIRES
CONDENSATE DRAIN LINE**
FUSED DISCONNECT**
THERMOSTAT*
TO OPEN SIGHT DRAIN (TRAP REQUIRED)

Typical piping and wiring — in-ceiling cassette systems



LEGEND

ϕ — Phase
NEC — National Electrical Code
Piping
Line Voltage
24 V

*Standard.
†Accessory item.
**Field supplied.

NOTES:
1. All piping must follow standard refrigerant techniques. Refer to Carrier System Design Manual.
2. All wiring must comply with applicable local and national codes.
3. Liquid line need not be insulated.
4. Accessory cooling AccuRater kit is required.
5. Wiring and piping shown are general points-of-connection guides only and are not intended for a specific installation.
6. Insulate condensate line if installed in a conditioned space.

Application data

Unit selection

Select equipment to either match or be slightly less than anticipated peak load. This provides better humidity control, fewer unit cycles, and less part-load operation.

For units used in spaces with high sensible loads, base equipment selection on unit sensible load, not on total anticipated load. Adjust for anticipated room wet bulb temperature to avoid undersizing equipment.

When selecting equipment which has outdoor air introduced into the unit, determine the mix conditions of room air and outdoor air at design conditions. The cooling capacity tables in this literature are based on 80 F edb. Adjust for actual dry-bulb and wet-bulb conditions with the required outdoor air to select the proper equipment.

Unit combinations and coil mixed matches

The 38AN and 38HDC units are the only units approved for use with the Carrier 40QNB, 40QAB, and 40QKB duct-free split systems. The 38AN and 38HDC units can also be used with other fan coil units.

Mixed matches of indoor-fan coil capacity more than one size larger than the outdoor condensing unit capacity may result in inadequate indoor comfort. Do not select mixed matches where the indoor-fan coil capacity is more than one size larger than the outdoor condensing unit capacity unless specifically indicated in this data. Heat pump fan coils can be used with cooling-only condensing units to provide electric heat capability.

Unit mounting (outdoor)

Unit leveling — For reliable operation, units should be level in all planes.

Clearance — Adequate clearance must be provided for airflow. See dimensional drawings for proper clearances. The condensing units are designed for free-blow application. Air inlets and outlets should not be restricted. Outdoor fan external static pressure available is less than 0.1 in. wg.

Unit location — Cooling units may be stacked 2 high. Units may be wall mounted, pad mounted at ground level, roof mounted, or mounted on or under a deck or patio. Be sure water from roof does not drain directly onto the unit.

See your Carrier representative for drawings to construct stacking rails or wall mounting brackets.

If 38HDC condensing units are being mounted near a wall, the condenser air should discharge toward the wall. This will provide inherent coil protection and the best possible sound and airflow performance. The 38AN units should be mounted with fan discharge pointing away from the wall.

Unit mounting (indoor)

Unit leveling — For reliable operation, units should be level in all planes. The 40QAB ceiling-suspended fan coils may have a slight pitch, but only toward the drain connection.

Clearance — Provide adequate clearance for airflow. The unit return and discharge should not be obstructed by furniture, curtains, or anything which may cause unit short cycling or air recirculation. See base unit dimensional drawings on pages 18-24 for required clearances.

Unit location — When selecting unit location, select a location which will provide the best air circulation for the room.

40QNB HIGH WALL UNITS — These units should be positioned as high as possible on the wall for best air circulation. Allow adequate clearances above the unit for servicing (removing unit covers). Place the unit in the middle of the wall selected (if possible). Select an outside wall if available to make piping easier, and place the unit so it faces the normal location of room occupants.

40QAB CEILING-SUSPENDED UNITS — These units should be mounted near the ceiling and against a wall. The unit should be centered in the room for best performance. Locating the unit on an outside wall will make piping easier, but units can also be mounted away from a wall if desired. (If the unit is mounted away from a wall, the rear panel of the unit may need a field-supplied trim strip for improved appearance.) Locate the fan coil return over an area which is not normally occupied for quietest operation. Do not block air discharge for a minimum of 15 ft to prevent dumping of cold air and drafts.

40QKB IN-CEILING CASSETTE UNITS — These units should be mounted in the ceiling, preferably near the center of the room. If the unit must be mounted near a wall, close the air discharge on the blocked side(s). (Up to 2 sides may be blocked.) Locate the control box away from the blocked side(s).

Mounting template

The 40QAB and QNB fan coil units are furnished with mounting templates or mounting plates to mark the location of the mounting brackets, wiring, and refrigeration line hole locations. In addition, the 40QAB units indicate the location of ventilation-air connections.

Support

Adequate support must be provided to support the weight of all fan coils. Refer to the Physical Data section on page 11 for fan coil weights, and the base unit dimensional drawings on pages 18-24 for the location of mounting brackets.

System operating conditions

Operating limits:

OUTDOOR CONDENSING UNITS

CONDITION	38AN	38HDC
Maximum Cooling Ambient (F)	125	125
Minimum Cooling Ambient (F) (without accessory low-ambient kit)	55	55
Minimum Cooling Ambient (F) (with accessory low-ambient kit)	–20	–20
Minimum Cooling Return-Air Temperature (F)	55	55
Maximum Cooling Return-Air Temperature (F)	95	95
Saturated Suction Temperature Range Minimum (F) Maximum (F)	 –15 55	 –15 55
Saturated Condensing Temperature Range Minimum (F) Maximum (F)	 85 150	 80 150
Maximum Compressor Discharge Temperature (F)	275	275
Minimum Discharge Superheat (F)	60	60

FAN COIL UNITS

CONDITION	40QNB	40QAB	40QKB
Maximum Room Temperature (F)	84	84	95
Minimum Room Temperature (F)	64	64	55
Maximum Return Air (F)			
Dry-Bulb	85	85	85
Wet-Bulb	72	72	72
Maximum Saturated Suction Temperature (F)	55	55	55
Minimum Saturated Suction Temperature (F)	27	27	27

Low-ambient operation

Units can operate in cooling down to 55 F under all conditions without a low-ambient kit.

Units equipped with accessory low-ambient kits should also be equipped with accessory wind baffle, crankcase heater, and winter start kit.

Winter start — The use of a winter start control may extend the operation range (generally to 35 F or 40 F) without addition of the low-ambient kit. Winter start bypasses the low-pressure switch for 3 minutes, and is not required on 38AN units.

Crankcase heater — Scroll compressor units with low-ambient control should be equipped with crankcase heaters to prevent refrigerant migration during compressor off cycle.

Metering devices

38AN units — The 38AN units have capillary tubes for refrigerant metering located in the outdoor condensing unit. These units may only be used with 40QNB fan coils of the same size.

38HDC units — The 38HDC units use a piston-type metering device located in the indoor unit.

NOTE: All Carrier duct-free split systems use Type ''B'' Chattleff style AccuRater® pistons. DO NOT mix Type ''A'' and Type ''B'' pistons. See Long-Lines Applications section on page 48 for changes in piston sizes due to long lines.

Drain connections

Install drains to meet local sanitation codes. If adequate gravity drainage cannot be provided, unit should be equipped with accessory condensate pump. High wall fan coil unit condensate pumps have a 1 to 10 ft lift (009 size) or 3 to 25 ft lift (012-024 sizes). All other fan coil units have a lift capability of 20 in. above the condensate pan level.

See base unit dimensional drawings on pages 18-24 for drain locations and sizes.

NOTE: High wall fan coil units have internal condensate traps. All other fan coil units require a field-supplied external condensate trap.

Drain connections may be routed through alternate locations on most fan coils. See base unit dimensional drawings on pages 18-24 for possible alternate locations.

Electric heat — The in-ceiling and ceiling-suspended systems can provide electric heat by using the heat pump version of the fan coil unit. The DIP switch must be reconfigured at the jobsite for proper operation. Also, any unit with a condensate pump must have a jumper wire installed between terminals O and Y on the low-voltage terminal strip. Refer to the heat pump Product Data literature for appropriate fan coil electrical data.

Refrigerant lines

General refrigerant line sizing:

1. All charges, line sizing, and capacities are based on runs of 25 ft. For runs over 25 ft (38HDC only), consult long-lines section on page 48 for proper line sizing, charge, and AccuRater refrigerant metering device sizing.

   NOTE: For runs less than 25 ft, some of the charge may need to be removed to obtain the correct system superheat. The minimum line length should be 8 ft.

MAXIMUM LINE LENGTHS

UNIT	MAXIMUM EQUIVALENT FT	MAXIMUM LIFT — FAN COIL BELOW CONDENSING UNIT	MAXIMUM LIFT — FAN COIL ABOVE CONDENSING UNIT
38HDC	200	150	65
38AN	35	30	16

2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, not more than 36 in. should be buried. Provide a minimum 6-in. vertical rise to the service valves to prevent refrigerant migration.
3. The vapor line must be insulated. Use a minimum of ½-in. thick insulation. Closed-cell insulation is recommended in all long-line applications.
4. Special consideration should be given to isolating interconnecting tubing from the building structure. Isolate the tubing so that vibration or noise is not transmitted into the structure.

38AN UNITS

1. The 38AN units are shipped with a full charge of R-22 refrigerant. Check the charge using the superheat method. Since all refrigerant lines are on the low side of the system, it is not normally necessary to add or remove charge.
2. The 38AN units have mixed-phase refrigerant flow in the liquid line. **DO NOT install a filter drier in the liquid line. The liquid line must be insulated.**
3. No line size changes should be made on 38AN units.

38HDC UNITS

1. The 38HDC units are shipped with a full charge of R-22 refrigerant. Charge is based on fan coil with smallest charge and 25 ft of line. See System Piston Guide and Refrigerant Charges on page 48 for system charges. Add additional charge by weight as necessary and check the charge with a superheat calculator.
2. For the 38HDC units, install the filter drier provided with the unit in the liquid line. Use of a field-supplied moisture indicator is also recommended.

Application data (cont)

Long-lines applications, 38HDC units:

1. Liquid lines on all 38HDC units should be 3/8 in. only. DO NOT resize liquid lines for additional length.
2. When sizing vapor line, determine line length by finding equivalent ft of pipe. Equivalent line lengths equal the linear length (measured length) of the interconnecting vapor tubing plus losses due to elbows (see Fitting Loss in Equivalent Ft For Elbows table on page 49). If the number of elbows is not yet known, assume 50% additional length for equivalent length. In determining line size, be sure oil can be properly returned to the compressor. Consult the Carrier System Design Guide for proper oil return recommendations. For line lengths from 25 to 49 ft, no special piping requirements are normally required. Adjust charge to required amount by adding charge per Step 7 on page 50 and checking superheat.

For line lengths over 50 ft:

1. A crankcase heater should be added to scroll compressor units (all non-scroll compressor units have crankcase heaters as standard). Crankcase heaters help prevent refrigerant migration to the compressor during the off cycle.
2. Any time the equivalent line length is over 100 ft, a liquid line solenoid must be used. A liquid line solenoid may also be required for vertical lift applications over 25 ft. See Step 6 on page 50.
3. A field fabricated accessory wind baffle is recommended.
4. The Effective Capacity Loss table on page 49 provides the estimated percentage of nominal cooling capacity losses based on the standard required vapor line size versus what is selected for long-line applications.
   a. Select the desired vapor line size from the Effective Capacity Loss table based on equivalent ft and desired vapor line size.
   b. Subtract the nominal percentage loss from the unit cooling capacities for the given indoor and outdoor combination.

SYSTEM PISTON GUIDE AND REFRIGERANT CHARGES

SYSTEM TYPE	SYSTEM NUMBER	INDOOR UNIT	OUTDOOR UNIT	PISTON REQUIRED (Size)	CHARGE (Lb)*
High Wall	53QNB	40QNB009	38AN009	None†	1.5
		40QNB012	38AN012	None†	1.8
		40QNB018	38HDC018	49	4.6
		40QNB024	38HDC024	57	5.3
Ceiling Suspended	53QAB	40QAB024††	38HDC018	53	3.7
		40QAB024	38HDC024	57	5.5**
		40QAB036	38HDC030	65	5.6
		40QAB036	38HDC036	70	5.4
		40QAB048	38HDC048	84	7.4
		40QAB060	38HDC060	93	13.6
Ceiling Suspended With Electric Heat	53QAE	40QAE024††	38HDC018	52	3.6
		40QAE024	38HDC024	53	6.2**
		40QAE036	38HDC030	63	5.6
		40QAE036	38HDC036	65	5.6
		40QAE048	38HDC048	84	7.4
		40QAE060	38HDC060	93	13.6
In-Ceiling Cassette	53QKB	40QKB024	38HDC018	52	4.8**
		40QKB036	38HDC024	62	5.2**
		40QKB036	38HDC030	63	5.2
		40QKB036	38HDC036	65	6.0**
In-Ceiling Cassette With Electric Heat	53QKE	40QKE024	38HDC018	52	5.8**
		40QKE036	38HDC024	62	4.8
		40QKE036	38HDC030	63	5.2
		40QKE048	38HDC036	67	5.8

*Charge based on 25 ft of interconnecting tubing. Charge may need to be added for longer tubing runs or when used with certain fan coils. Check unit nameplate for required charge.
†Capillary tube located in the outdoor unit.
**Combination may require additional charge.
††The 024 size unit shown is configured as an 018 size unit by changing the motor speed fan tap plug. Refer to unit Installation Instructions for more details.

NOTES:
1. All pistons are Chattleff "B" type.
2. All cooling units have a full factory charge.
3. Service valves are front-seating type.

FITTING LOSS IN EQUIVALENT FT FOR ELBOWS

TUBE SIZE O.D. (in.)	90-DEGREE SHORT RADIUS	90-DEGREE LONG RADIUS	45-DEGREE SHORT RADIUS
5/8	1.6	1.0	0.8
3/4	1.8	1.2	0.9
7/8	2.0	1.4	1.0
1 1/8	2.6	1.7	1.3

5. Changes in piston size — The metering device for a long-line application must be adjusted to compensate for the frictional losses due to the long refrigerant lines, refrigerant line accessories, and indoor coil above or below the outdoor unit. The AccuRater® refrigerant metering device piston may need to be changed to provide this adjustment. The AccuRater piston should be changed for the indoor unit depending upon system configuration and line length. Use the Change in Indoor Unit Piston Size for Elevation table on next page to determine correct AccuRater piston size. The standard piston size is shown in the System Piston Guide and Refrigerant Charges table on page 48.
   a. Horizontal configuration — If the total equivalent horizontal length is 100 ft or longer, the indoor piston must be increased one full piston size, in addition to the charge change in Step 7, page 50. If exact size is not available, use next smaller size per Chattleff Type B Common Piston Sizes table.
   b. Elevated configuration — After finding the appropriate change in piston size, add or subtract the change from the original piston size number. If the piston size is decreased, round down to the next common piston size. If the piston size is increased, round the new piston size up to the next common piston size.

CHATTLEFF TYPE B COMMON PISTON SIZES

PISTON SIZE	PISTON SIZE	PISTON SIZE
32	53	80
33	55	81
35	57	82
36	59	84
37	61	86
38	62	88
39	63	89
40	65	90
41	67	92
42	68	93
43	70	96
45	71	98
47	73	101
49	74	104
51	76	—
52	78	—

EFFECTIVE CAPACITY LOSS

NOMINAL UNIT SIZE* (Btuh)	STANDARD VAPOR LINE (in.)	LONG-LINE VAPOR LINE (in.)†	PERCENT COOLING CAPACITY LOSS						
			50 ft	75 ft	100 ft	125 ft	150 ft	175 ft	200 ft
18,000	5/8	5/8	2	4	6	7	9	10	12
	5/8	3/4	0	0	1	2	3	4	6
24,000	5/8	5/8	4	6	9	11	13	15	**
	5/8	3/4	0	1	2	3	4	5	6
30,000	3/4	3/4	2	3	4	5	7	8	10
	3/4	7/8	0	2	3	4	5	6	7
36,000	7/8	7/8	2	4	6	7	9	11	13
	7/8	7/8	0	2	3	4	5	6	7
48,000	7/8	7/8	4	6	9	11	13	15	**
	7/8	7/8	3	4	5	7	8	10	13
	7/8	1 1/8	1	2	3	4	5	6	7
60,000	1 1/8	1 1/8	4	7	9	11	13	15	**
	1 1/8	1 1/8	2	3	5	6	8	9	11

*Nominal cooling capacity of the unit being specified.
†The vapor line diameter that may be selected for long-line application. If smaller vapor lines than are specified in the table are selected, a larger capacity loss will occur. If larger vapor lines are selected, refrigerant oil return will be impaired due to velocity loss.
**Not recommended due to excessive loss of capacity.

Application data (cont)

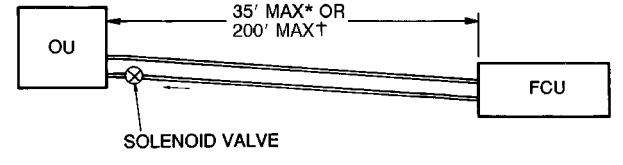
CHANGE IN INDOOR UNIT PISTON SIZE FOR ELEVATION

OUTDOOR UNIT ABOVE INDOOR UNIT	
Ft	**Piston Change**
0-25	0
26-50	-3
51-75	-5
76-100	-7
101-125	-9
126-150	-10
INDOOR UNIT ABOVE OUTDOOR UNIT	
Ft	**Piston Change**
0-25	0
26-65	+4

6. Liquid line solenoid and tubing configuration — The solenoid has a flow arrow stamped on the valve body. When the valve is closed (not energized) and pressure is applied in the direction of the flow arrow, complete shut off will occur. If pressure is applied against the direction of the arrow, leakage through the valve will occur. When determining the proper location for a solenoid in a system liquid line, consider both flow direction and location of the valve in the system. See the diagram below for proper location, and install as follows:
   a. Horizontal configuration (see figure below) —
      1) Install a liquid line solenoid valve within 2 ft of the fan coil with the flow arrow pointing toward the indoor unit if equivalent ft of piping is 100 ft or more.
      2) Slope the vapor line toward the indoor unit to provide for refrigerant migration protection during the off cycle due to temperature differences caused by slight elevation changes between indoor and outdoor units.

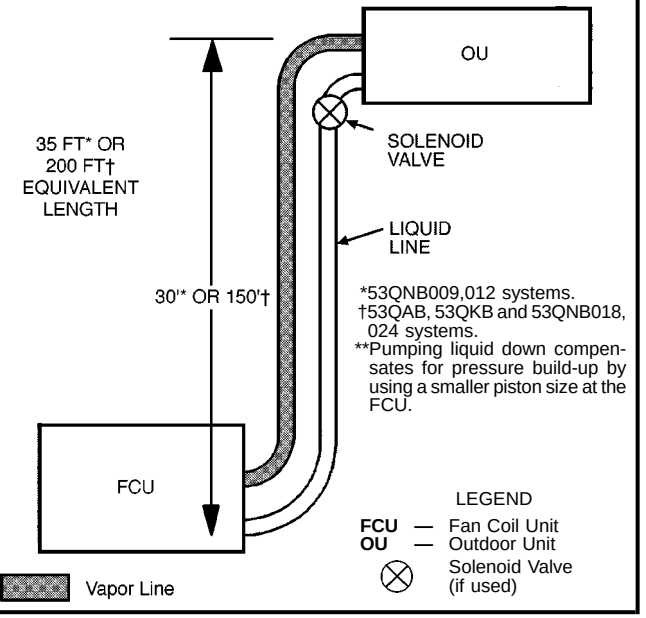
      NOTE: When installing a liquid line solenoid, a low-voltage transformer may be required.

HORIZONTAL CONFIGURATION

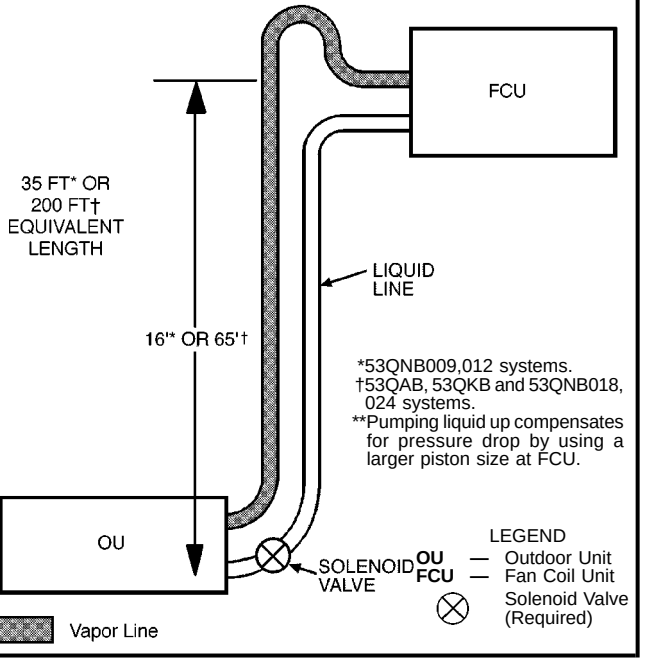


   b. Elevated configuration — Indoor unit installed above the outdoor unit (see figure at right):
      1) If there is over 25 ft of lift, a solenoid valve is required in the liquid line.
      2) The maximum elevation difference is 65 ft, and the maximum equivalent ft of piping is 200.
      3) Install an inverted trap in the vapor line. The top of the trap must be above the top of the fan coil. This prevents the refrigerant from collecting in the vapor line.
   c. Lowered configuration — Indoor unit installed below the outdoor unit (see figure below):
      1) For lines shorter than 100 ft, no solenoid valve is required in the liquid line. For lines over 100 ft, install a solenoid valve in the liquid line.
      2) The maximum elevation difference is 150 ft, and the maximum equivalent ft is 200.
7. Additional charge — The unit should be charged by weighing in the appropriate charge. Add charge based on the actual length of line which is over 15 ft of liquid line. Add 0.58 oz of refrigerant per 1 ft increase over the 15 ft line to the charge listed in System Piston Guide and Refrigerant Charges table on page 48.

LOWERED CONFIGURATION — INDOOR UNIT INSTALLED BELOW THE OUTDOOR UNIT


OU
SOLENOID VALVE
35 FT* OR 200 FT† EQUIVALENT LENGTH
LIQUID LINE
30'* OR 150'†
*53QNB009,012 systems.
†53QAB, 53QKB and 53QNB018, 024 systems.
**Pumping liquid down compensates for pressure build-up by using a smaller piston size at the FCU.
FCU
LEGEND
FCU — Fan Coil Unit
OU — Outdoor Unit
Solenoid Valve (if used)
Vapor Line

ELEVATED CONFIGURATION — INDOOR UNIT INSTALLED ABOVE THE OUTDOOR UNIT



Controls

Wired 24 v controls (40QAB, 40QKB)

1. A 24-v thermostat is supplied for operation of all in-ceiling and cassette systems.
2. Controller can only operate one unit, and a controller is required for each unit.
3. The control must be located in the space being conditioned.

Wireless remote controller (40QNB)

1. A wireless remote controller is supplied for system operation of all high-wall units.
2. Each battery-operated wireless (infrared) remote controller may be used to control more than one unit.
3. The wireless remote controller has a range of 20 ft.
4. The unit is equipped with an emergency switch which allows operation if the remote controller malfunctions or is misplaced.
5. Because the controller uses infrared communication, all of the following must be true for the controller to work properly:
   a. The power must be on to the fan coil unit.
   b. The batteries in the controller must be good.
   c. The controller must be within range of and pointed directly at the unit.
   d. The unit's 3-position switch must be set in the Remote position.

Wiring

Use only copper wires from the disconnect to the unit terminal block. Aluminum and copper-clad aluminum wires are not acceptable.

All duct-free split systems provide 24 v power for the outdoor unit from the indoor unit except the 53QNB009 and 012 systems, which provide line voltage control.

All other fan coil types should have a separate disconnect for indoor and outdoor units.

Air throw

Refer to Air Throw Data table below for system air throw capabilities.

AIR THROW DATA

SYSTEM	SYSTEM TYPE	SIZE	HIGH SPEED AIRFLOW (CFM)	APPROXIMATE AIR THROW (FT)
53QNB	High Wall	009	240	17
		012	260	20
		018	550	32
		024	570	35
53QAB	Ceiling Suspended	018	500	25
		024	600	30
		030,036	840	40
		048	1200	45
		060	1600	45
53QKB	In-Ceiling Cassette	018	525	22
		024	915	20
		030	915	20
		036	915	20

NOTE: Air throw is with unit mounted with typical clearances in a 10-ft high room.

Fresh air/ducting

1. The 40QAB ceiling-suspended fan coil units may bring in up to 30% fresh air. The percentage of air allowable is calculated based on the unit high speed cfm. Air quantities above this level may exceed compressor maximum saturated suction temperatures. A power ventilation kit is available to overcome ventilation duct static. See Power Ventilation Kit Available Static Pressure table below.
2. The 40QKB in-ceiling cassette fan coil units may bring in up to 10% fresh air. This 10% maximum should not be exceeded. A power ventilation kit is available to overcome ventilation duct static. See Power Ventilation Kit Available Static table below.
3. The 40QKB in-ceiling cassette fan coil units may have an extension duct installed. See Static Capability and Design Considerations figures on page 52.

POWER VENTILATION KIT AVAILABLE STATIC PRESSURE

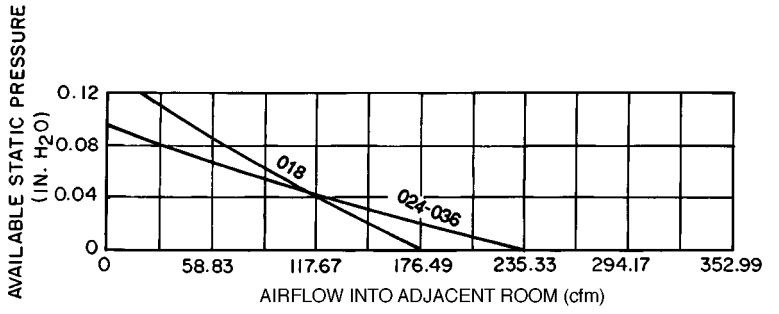
FAN HP	WATTS	RPM	VOLTAGE	CFM AT STATIC PRESSURE (in. wg)								DUCT DIA. (in.)	SONES
				0	⅛	¼	⅜	½	¾	1	1½		
1/15	150	2700	208/230	370	335	318	298	256	219	189	112	6	4.0

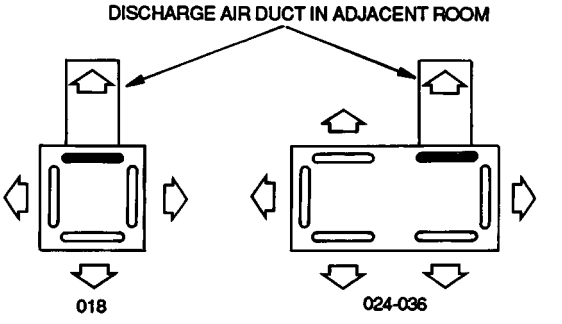
SONE — A subjective unit of loudness, equal to the loudness of a pure tone having a frequency of 1,000 Hz at 40 decibels above the listener's threshold of audibility. This is for comparative purposes only.

Application data (cont)

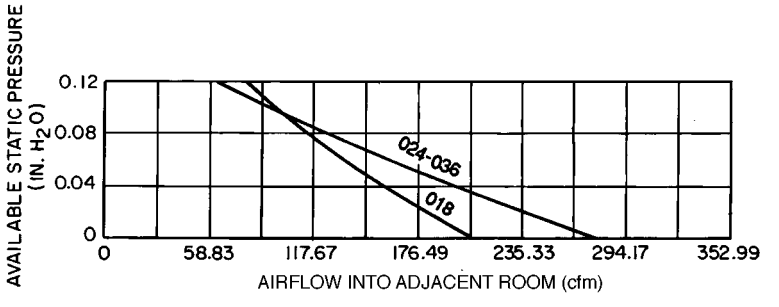
STATIC CAPABILITY AND DESIGN CONSIDERATIONS, 53QKB CASSETTE SYSTEMS

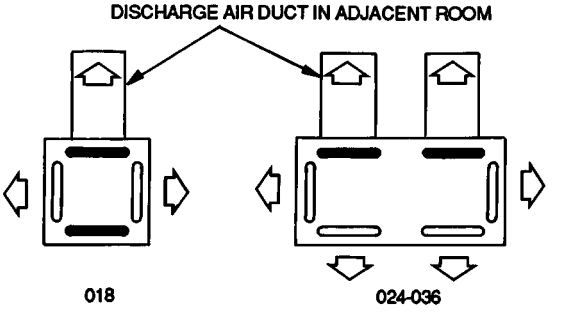
ONE DIFFUSER CLOSED

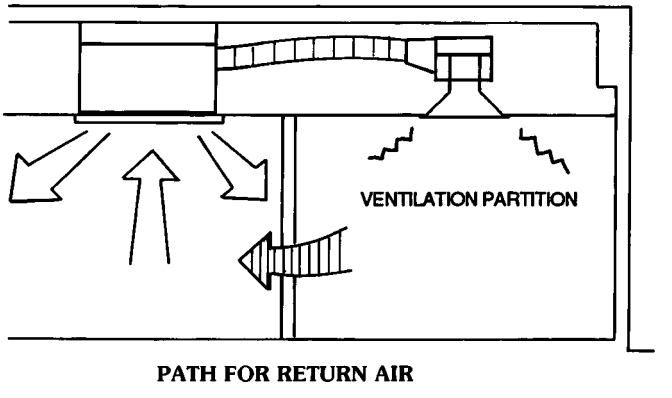


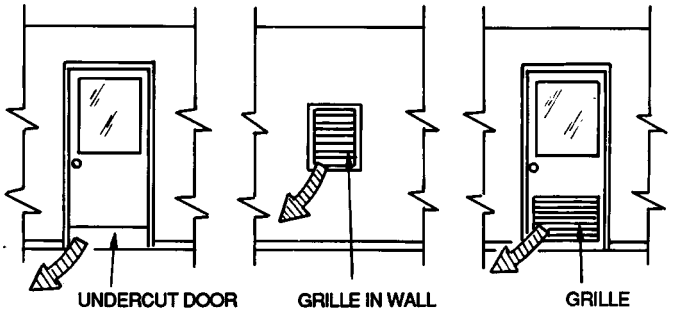


TWO DIFFUSERS CLOSED









Sound data

CONDENSING UNIT SOUND RATINGS

UNIT	SOUND RATING (Decibels)	FREE FIELD dBA*
38AN009	65	55.7
38AN012	65	55.7
38HDC018	70	59.9
38HDC024	68	57.9
38HDC030	68	57.9
38HDC036	68	57.9
38HDC048	72	61.9
38HDC060	72	61.9

LEGEND

dBA — Decibels on the A Scale

*Free field is a rating with no reflective surfaces near the unit. Data sound pressure is measured at 1 m from the unit. See Sound Power Data Octave Bands table for more information.

NOTE: Units rated in accordance with ARI (Air Conditioning & Refrigeration Institute) Standard 270.

SOUND POWER DATA OCTAVE BANDS — A WEIGHTED

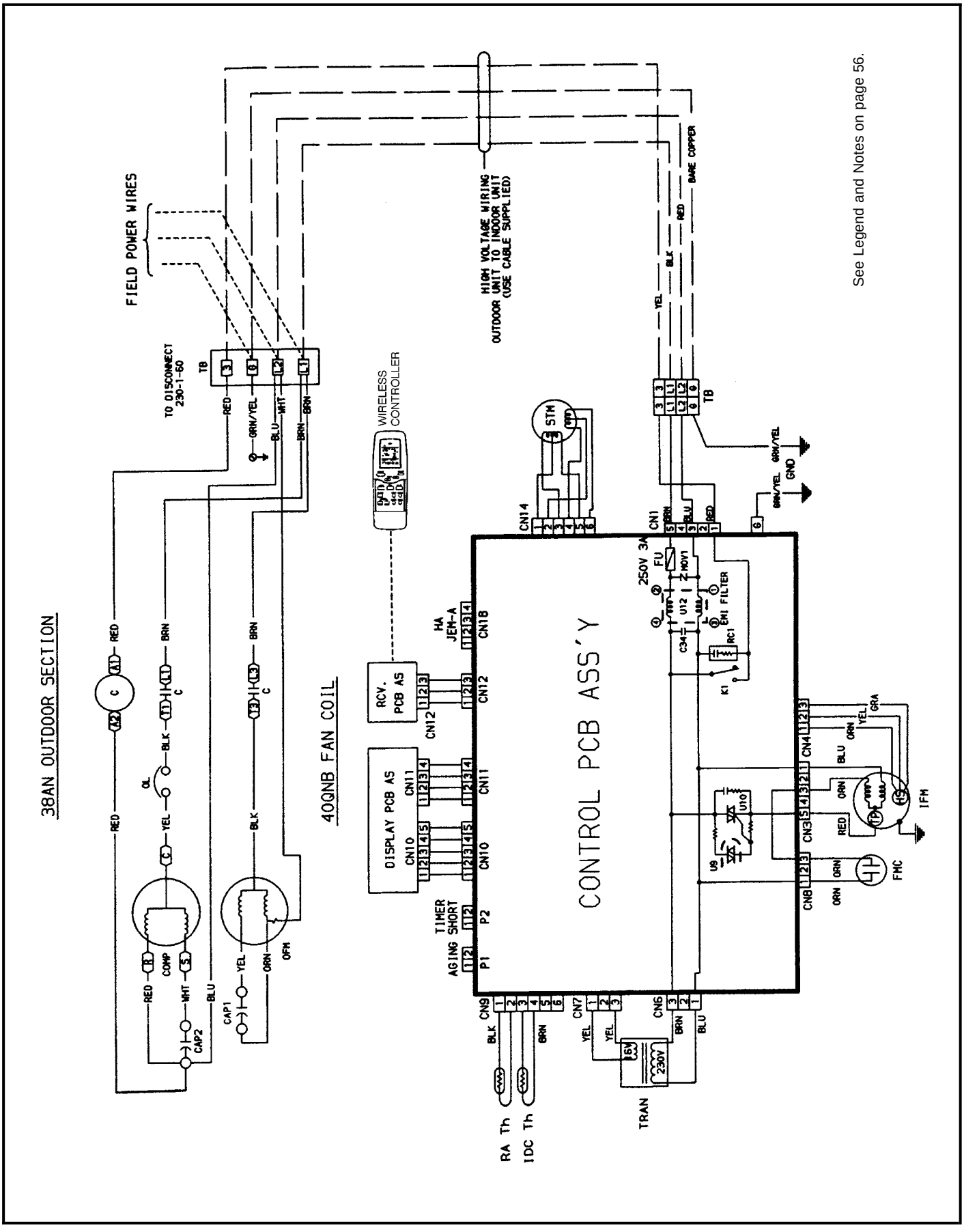
UNIT	FAN SPEED	OCTAVE BAND DATA (dBA)						
		125	250	500	1000	2000	4000	8000
38AN009	H	48.9	54.9	58.3	59.1	54.9	49.1	39.9
38AN012	H	49.3	59.1	59.0	60.0	55.2	49.2	44.0
38HDC018	H	55.1	55.5	58.4	61.6	61.2	56.0	45.5
38HDC024	H	48.6	55.8	59.6	61.8	59.3	55.1	44.2
38HDC030	H	67.5	58.0	59.0	60.5	51.5	48.0	40.5
38HDC036	H	47.3	55.3	59.2	61.3	57.9	52.3	44.9
38HDC048	H	58.5	63.2	64.3	65.3	64.2	61.3	50.7
38HDC060	H	54.9	59.8	63.6	64.5	63.9	60.1	50.3
40QNB009	H	36.5	40.3	45.2	48.2	42.3	33.2	31.2
	M	32.8	37.9	43.6	44.9	39.1	29.8	31.2
	L	31.7	36.6	41.6	41.6	35.4	27.7	31.2
40QNB012	H	36.7	43.5	50.2	51.1	46.5	38.6	31.7
	M	33.6	42.5	47.1	48.8	43.4	36.2	33.4
	L	33.5	41.6	43.8	45.6	39.8	33.0	32.7
40QNB018	H	40.8	49.1	53.7	55.2	49.1	41.3	32.3
	M	38.0	46.7	50.6	51.7	44.9	35.8	31.6
	L	37.3	44.4	47.5	48.6	40.4	32.0	31.6
40QNB024	H	44.9	51.9	59.1	59.5	54.8	48.0	36.7
	M	43.7	50.5	57.2	57.0	51.8	44.4	33.6
	L	40.7	47.7	55.1	54.7	49.0	40.5	32.2
40QAB018	H	38.1	50.0	52.6	54.7	49.0	41.5	31.8
	M	36.4	47.7	50.7	52.3	46.3	37.4	29.5
	L	35.1	46.2	49.3	50.5	43.5	34.3	29.0
40QAB024	H	39.2	50.9	53.4	56.0	50.4	43.1	32.8
	M	38.1	50.0	52.6	54.7	49.0	41.5	31.8
	L	36.4	47.7	50.7	52.3	46.3	37.4	29.5
40QAB036	H	50.2	61.0	60.5	65.0	61.7	58.9	51.5
	M	47.9	58.6	58.3	62.8	59.1	56.6	48.1
	L	46.2	55.6	56.2	59.9	56.3	53.6	43.0
40QAB048	H	48.7	60.8	60.4	64.0	60.3	57.3	47.7
	M	47.8	59.2	59.4	63.1	59.2	56.2	46.6
	L	NA	NA	NA	NA	NA	NA	NA
40QAB060	H	52.5	63.6	63.7	67.0	63.3	59.0	50.0
	M	51.2	61.5	61.9	66.4	60.8	56.6	47.0
	L	49.5	59.1	60.0	63.1	58.3	53.6	43.8
40QKB024	H	32.1	45.0	51.2	54.1	46.5	45.0	36.5
	M	NA	NA	NA	NA	NA	NA	NA
	L	NA	NA	NA	NA	NA	NA	NA
40QKB036	H	45.0	45.8	50.9	51.8	47.4	38.8	32.9
	M	35.5	40.2	46.1	45.2	39.0	29.9	28.7
	L	31.2	37.8	40.3	37.0	26.5	24.5	27.3

LEGEND

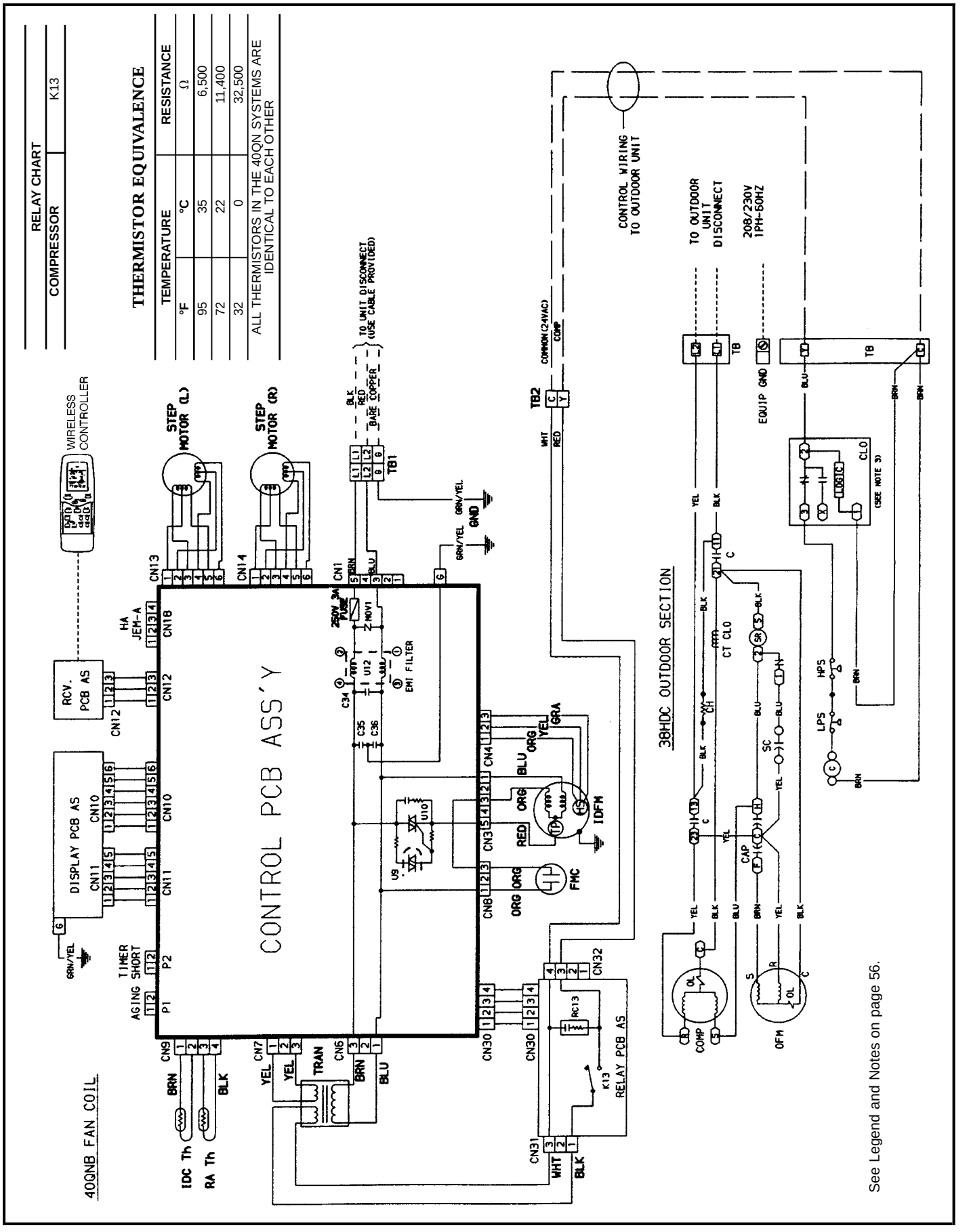
ARI — Air Conditioning & Refrigeration Institute
dBA — Decibels on the A scale
H — High
L — Low
M — Medium

NOTES:
1. Outdoor sound levels are tone corrected values taken in accordance with ARI Sound Standard 270.
2. Indoor sound levels are tone corrected values taken in accordance with ARI Sound Standard 350.

Typical wiring schematic, 53QNB009,012 systems (012 shown)



Typical wiring schematic, 53QNB018,024 systems



Typical wiring schematics (cont)

LEGEND AND NOTES FOR TYPICAL WIRING SCHEMATICS, 53QNB

LEGEND

AGING	—	For Burn-In Test (short terminals)
AS	—	Assembly
C	—	Contactor
CAP	—	Capacitor
CH	—	Crankcase Heater
CLO	—	Compressor Lockout
CN	—	Connector
COMP	—	Compressor
CT CLO	—	Current Sensing Loop (Lockout)
EMI	—	Electromagnetic Interference
FMC	—	Fan Motor Capacitor
FU	—	Fuse
GND	—	Ground
HA	—	Home Automation
HPS	—	High-Pressure Switch
HS	—	Hall-Effect Sensor
IDC Th	—	Indoor-Coil Thermistor
IDFM,IFM	—	Indoor-Fan Motor
JEM-A	—	Japan Electric Manufacturing Industry Association
K	—	Relay
LPS	—	Low-Pressure Switch
OFM	—	Outdoor-Fan Motor
OL	—	Overload
PCB	—	Printed Circuit Board
RA Th	—	Return-Air Thermistor
RC	—	Resistor Capacitor
RCV	—	Receiver
SC	—	Start Capacitor
SR	—	Start Relay
STM	—	Step Motor
TB	—	Terminal Block
TP	—	Thermal Protector
TRAN	—	Transformer

Terminal (Marked)

Terminal (Unmarked)

Splice

Terminal Block

Factory Wiring

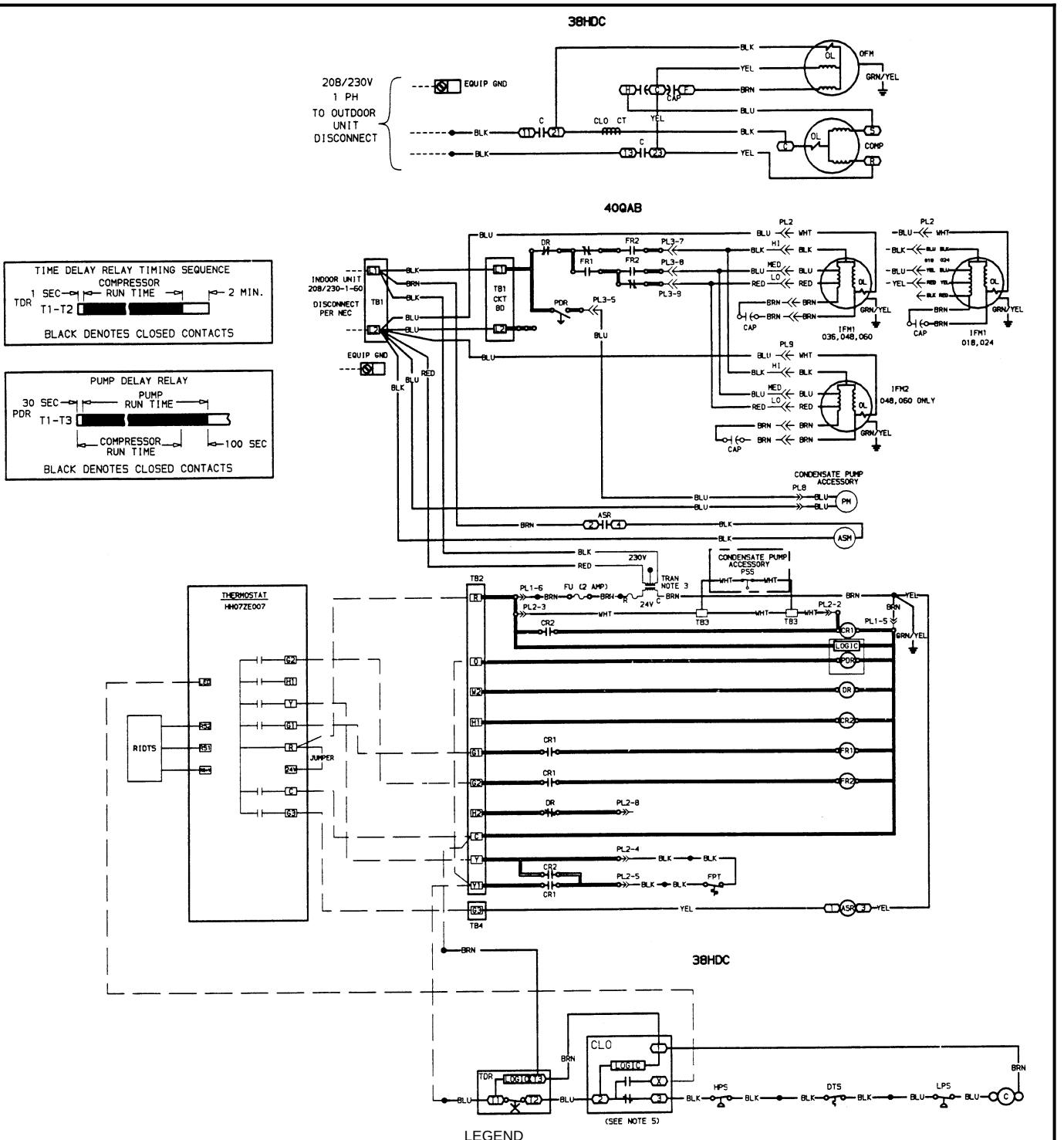
Field Control Wiring

Field Power Wiring

Accessory or Optional Wiring

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90 C wire or its equivalent.
2. Wire in accordance with National Electrical Code (NEC) and local codes.
3. The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO, check these other devices. A minimum 1 amp turn is required to hold contacts closed.
4. A thermistor wiring cable is provided with the fan coil unit.
5. Compressor and fan motors are protected by internal thermal overloads.
6. Transformer has an internal 2 amp thermal fuse on the primary side.

Typical wiring schematic — 53QAB system



TIME DELAY RELAY TIMING SEQUENCE

COMPRESSOR

TDR 1 SEC — RUN TIME — 2 MIN.

T1-T2

BLACK DENOTES CLOSED CONTACTS

PUMP DELAY RELAY

PDR 30 SEC — PUMP RUN TIME

T1-T3

COMPRESSOR RUN TIME — 100 SEC

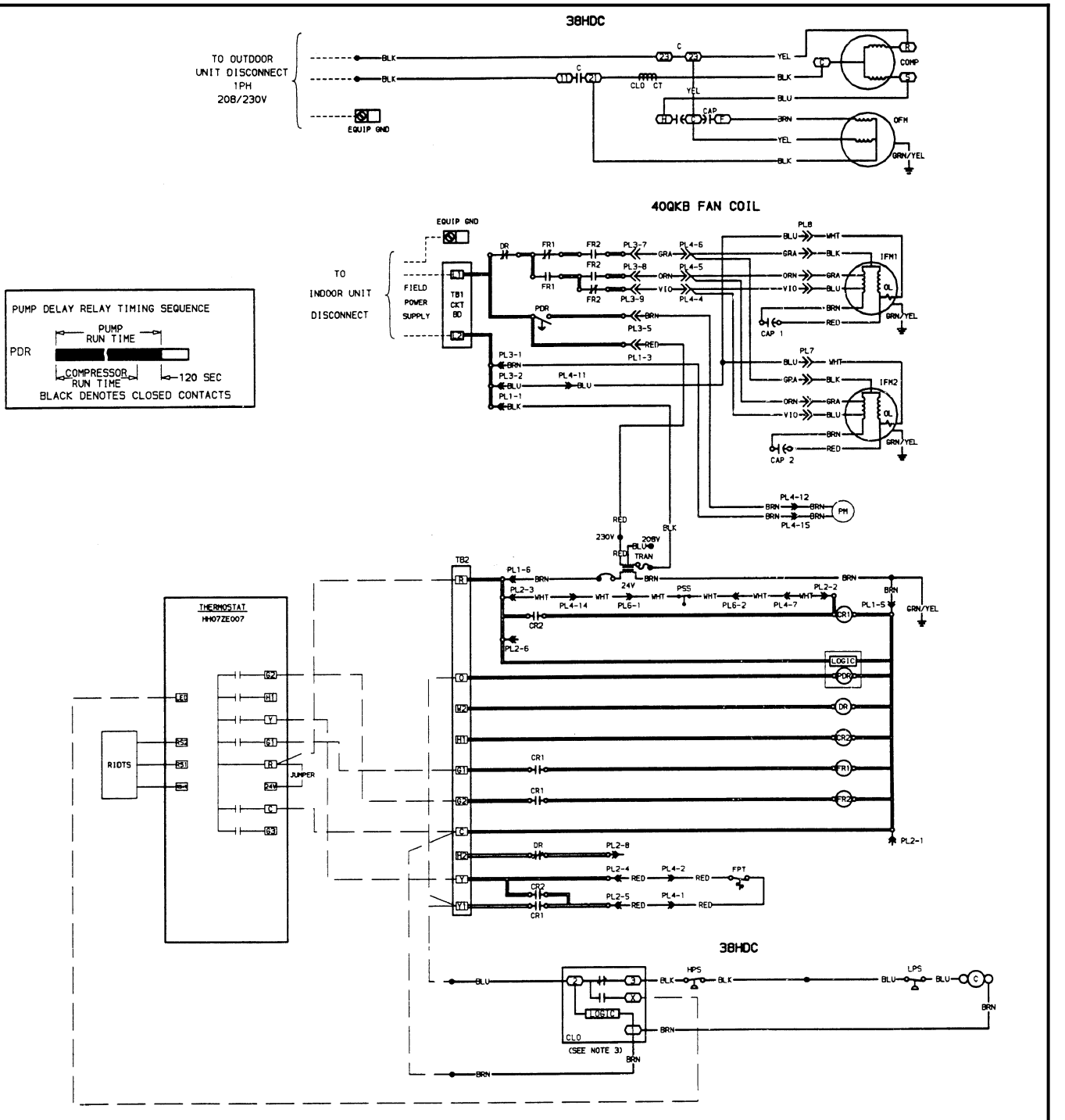
BLACK DENOTES CLOSED CONTACTS

LEGEND

ASM	— Air Sweep Motor	**EQUIP. GND.**	— Equipment Ground	**OL**	— Overload		Terminal (Marked)
ASR	— Air Sweep Relay	**FPT**	— Freeze Protection Thermostat	**PDR**	— Pump Delay Relay		Terminal (Unmarked)
ASW	— Air Sweep Switch	**FR**	— Fan Relay	**PL**	— Plug		Splice
C	— Contactor	**FU**	— Fuse	**PM**	— Pump Motor		Terminal Block
CAP	— Capacitor	**HP**	— Heat Pump	**PSS**	— Pump Shut-Off Switch		Factory Wiring
CLO	— Compressor Lockout	**HPS**	— High Pressure Switch	**RIDTS**	— Remote Indoor Temperature Sensor		Field Control Wiring
COMP	— Compressor	**IFM**	— Indoor Fan Motor	**TB**	— Terminal Block		Field Power Wiring
CR	— Control Relay	**LPS**	— Liquid Low Pressure Switch	**TDR**	— Time Delay Relay		Printed Circuit Board
CT	— Current Transformer	**OFM**	— Outdoor Fan Motor	**TRAN**	— Transformer		Accessory or Optional Wiring
DR	— Defrost Relay						
DTS	— Discharge Temp. Sensor						

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90° C wire or its equivalent.
2. Wire in accordance with National Electrical Code (NEC) and local codes.
3. Transformer is thermally protected and will reset automatically.
4. IFM(S), OFM and COMP have internal thermal protection.
5. The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO, check these devices. Minimum one amp turn required to hold contacts closed.

Typical wiring schematic — 53QKB system

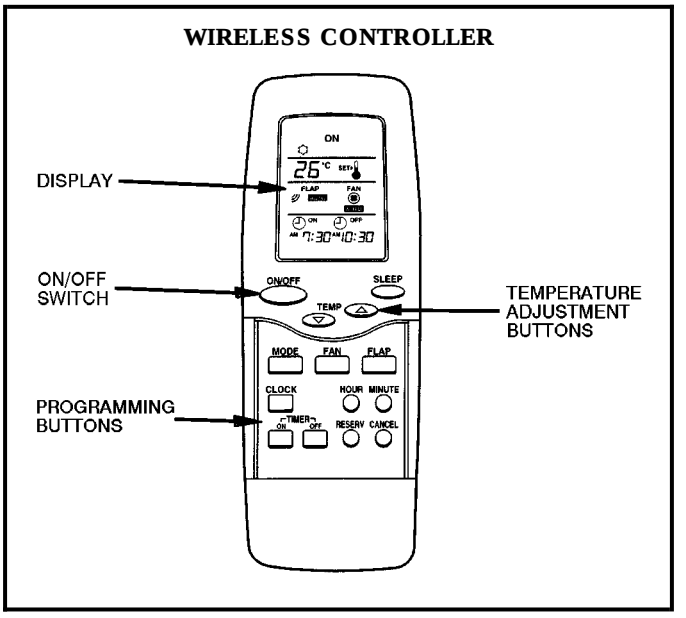


LEGEND

C	— Contactor	**HPS**	— High Pressure Switch	**TB**	— Terminal Block		Factory Wiring
CAP	— Capacitor	**IFM**	— Indoor Fan Motor	**TRAN**	— Transformer		Field Control Wiring
CLO	— Compressor Lockout	**LPS**	— Low Pressure Switch		Terminal (Marked)		Field Power Wiring
COMP	— Compressor	**OFM**	— Outdoor Fan Motor		Terminal (Unmarked)		Printed Circuit Board
CR	— Control Relay	**OL**	— Overload		Splice		Accessory or Optional Wiring
CT	— Current Transformer	**PDR**	— Pump Delay Relay		Terminal Block		
DR	— Defrost Relay	**PL**	— Plug				
EQUIP. GND.	— Equipment Ground	**PM**	— Pump Motor				
FPT	— Freeze Protection Thermostat	**PSS**	— Pump Shutoff Switch				
FR	— Fan Relay	**RIDTS**	— Remote Indoor Temperature Sensor				

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with type 90° C wire or its equivalent.
2. Wire in accordance with National Electrical Code (NEC) and local codes.
3. Transformer is thermally protected and will reset automatically.
4. IFM(S), OFM and COMP have internal thermal protection.
5. The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO, check these devices. Minimum one amp turn required to hold contacts closed.

Controls — systems using high-wall fan coils (53QNB)



Control system — The 40QNB unit is equipped with a microprocessor control which operates the system. This control is located in the control box of the fan coil unit, with thermistors located in the fan coil inlet and on the indoor coil. These thermistors monitor system operation and control the operating mode. To change settings or modes of operation, use the factory-supplied infrared wireless remote controller (see above). This controller allows the fan coil unit to be operated from within the same room without any wire connections to the unit.

The remote controller includes a wall-mounted bracket. To install the bracket, attach bracket to the wall using factory-supplied, double-sided tape. Install factory-supplied batteries into the remote controller and place the controller into the bracket so that it is ready for use.

Operating mode memory — After the system is turned off or after a power failure, the system remains in the last operating mode selected. When the system is turned back on, or when power is automatically restored, operation continues in the same operating mode as when power shut down.

Automatic operation (Auto) mode — If auto mode is selected, the system automatically switches the operating mode to cooling, depending on the selected temperature.

Operating fault diagnosis — The system includes an automatic diagnosis feature which is activated under difficult or unacceptable operating conditions. If such conditions occur, the system stops automatically, the operating fault signal appears (green ''UNIT ON'' light on the front of the fan coil unit flashes), and an analysis of the system operating conditions is initiated. The system is restarted automatically as soon as normal conditions have been restored, or it will remain off. If the system does not start again, the green ''UNIT ON'' light flashes an error code.

Microprocessor control operation — This system is controlled by a microprocessor designed to give optimum levels of comfort and operating efficiency. The control is located in the 40QNB unit. To operate the unit, the factory-supplied remote controller is required.

There are 9 operating modes (including the off mode) for the unit. Each mode operates as follows:

- Off Mode — When the unit is in the off mode, all functions (compressor, outdoor fan, indoor fan, and air sweep) are off.
- Air Circulation Mode (Fan Operation Only) — When air circulation mode is selected, the indoor fan operates continuously at the selected speed (high, medium, low, or auto). If the auto mode is selected, the indoor fan operates at low speed. The compressor and outdoor fan are off.
- Cooling Mode — When the cooling mode is selected, the indoor fan operates continuously at the selected speed if the speed is high, medium, or low. If the indoor fan is in auto mode, the fan changes operating speeds depending on the difference between the room temperature and the set point. The compressor cannot run for 3 minutes from the time the system starts up or for 3 minutes from the time the compressor last operated. When the temperature of the room is equal to or greater than the selected temperature, the compressor and outdoor fan will operate until the room temperature is 2° F below the set point, and then shut off. When the room temperature is less than the selected temperature, the compressor and outdoor fan remain off.
- Maximum Dehumidification Mode — When the dehumidification mode is selected, the indoor fan operates continuously at the selected speed if the speed is high, medium, or low. If the indoor fan is in auto mode, the fan changes operating speeds depending on the room temperature. If the room temperature is below the set point, the indoor fan runs at ultra-low speed, and the compressor could run for up to 4 minutes. (Ultra-low speed is a control-driven speed [not user configurable] used to sample the space when the fan would normally be off.) The compressor cannot run for 3 minutes from the time the system starts up or for 3 minutes from the time the compressor last operated.

Initial Operation — When the mode is first selected, one of the following occurs:

1. If the room temperature is above or equal to the selected temperature, the unit operates for 16 minutes and the compressor and outdoor fan operate. The indoor fan will operate as in the cooling mode. After 16 minutes of operation (or when the room reaches 2° F below set point), the unit switches to normal dehumidification operation.

Controls — systems using high-wall fan coils (53QNB) (cont)

2. If the room temperature is below the selected temperature, the unit operates for 8 minutes as follows: The compressor and outdoor fan will operate for 3 minutes. The indoor fan will operate at low speed, and 30 seconds after the compressor stops, the indoor fan stops. The unit remains off for 1 minute, and then the indoor fan starts at ultra-low speed for 30 seconds. The unit then switches to normal dehumidification operation.

Normal Operation — One of the following will take place:

1. When the temperature of the room is equal to or greater than the selected temperature (by not more than 3° F), the unit will operate for 8 minutes as follows: the compressor and outdoor fan will operate for 3 minutes. The indoor fan will operate at low speed, and 30 seconds after the compressor stops, the indoor fan stops. The unit remains off for 1 minute, and then the indoor fan runs at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature.
2. If the room temperature is equal to or greater than the selected temperature, but not by more than between 4° F and 6° F, the compressor and outdoor fan operate for 4 minutes. The indoor fan runs at ultra-low speed and will stop 30 seconds after the compressor stops. After 3 minutes, the indoor fan runs at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature.
3. When the room temperature is equal to or more than 4° F below the selected temperature, the system operates as follows: The compressor and outdoor fan operate for 3 minutes. The indoor fan operates at ultra-low speed and will stop 30 seconds after the compressor stops. After 4 or 5 minutes, the indoor fan starts at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature. If the room temperature is still 4° F below the selected temperature, the compressor, outdoor fan, and indoor fan remain off. After 7½ minutes, the indoor fan operates at ultra-low speed for 30 seconds. The normal dehumidification operation is repeated for the newly sensed room temperature.

- Sleep Mode — The sleep mode timer will turn the unit off when the timer reaches zero minutes. The durations that can be selected are 1, 2, 3, or 7 hours. After the initial 30 minutes, the user set point shifts approximately 1° F warmer. This sequence repeats itself every 40 minutes up to a total of 150 minutes.

  When in sleep mode the display on the remote controller is dimmed.

- Awake Mode — The awake timer will turn the unit on when the timer reaches zero minutes. The unit starts in the same mode and at the same selected temperature as when the system shut off. If the room temperature is not within approximately 5 F of the set point 40 minutes before start-up, the unit runs before the awake timer reaches zero to achieve the set point temperature at start-up.
- Automatic Operation Mode for Cooling Only Systems — The unit samples the air in the room. Based on the room temperature, the unit selects one of the following modes:

1. Cooling Mode — If the room temperature is more than 82.4 F with a preset temperature of 78.8 F.
2. Dry Mode — If the room temperature is more than 75.2 F and less than 82.4 F with a preset temperature of 77 F.
3. Fan Only Mode — If the room temperature is less than 75.2 F.

   The preset temperature can be changed by ±4° F using the remote control.

- Test Mode — The test mode can be selected by setting the slide switch on the fan coil unit to TEST position. The slide switch is located on the front of the unit. The fan coil unit will start immediately (there is no compressor time delay when using test mode) in cooling mode with an infinitely low set point. The indoor fan speed will be at the high setting, and the swing louvers will be on (moving up and down).

NOTE: The unit cannot be controlled by the remote controller until the slide switch is returned to the REMOTE position.

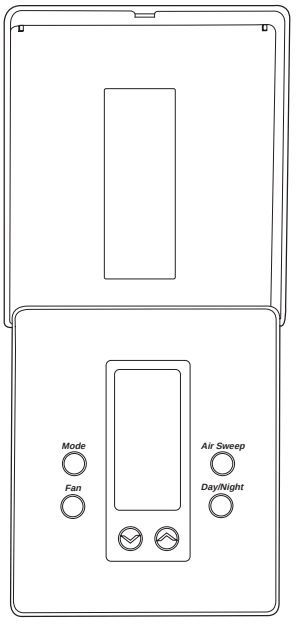
- Emergency Mode — This mode is only to be used if the remote controller is lost, damaged, or the batteries are discharged. To initiate emergency mode, manually move the slide switch on the fan coil unit to the EMER position. The unit is automatically operated in cooling mode according to room temperature. Emergency operation settings are as follows:

1. Operation mode: AUTO
2. Fan Speed: AUTO
3. Cooling set point: 77 F
4. Timer Mode: Continuous

NOTE: The unit cannot be controlled by the remote controller until the slide switch is returned to the REMOTE position.

Controls — systems using ceiling-suspended (53QAB) or cassette (53QKB) fan coils

REMOTE THERMOSTAT



Operating mode memory

After the system is turned off or after a power failure, the system remains in the last operating mode selected. When the system is turned back on, or when power is automatically restored, operation continues in the same operating mode as when the system shut down.

Automatic air sweep

All units are equipped with an automatic air sweep feature which automatically directs the airflow louvers up and down to provide optimum room air circulation. If the auto sweep feature is not desired, temporarily start the auto sweep using the remote thermostat (press Air Sweep button). When the louvers are in the desired position, turn auto sweep off (press Air Sweep button again) to hold them in that position.

Operating sequence

Ceiling-suspended and cassette fan coil units have a relay board which controls system operation in response to a room thermostat. The user may manually select any one of 3 fan speeds for unit operation. Systems may be equipped with an accessory power ventilation kit and/or condensate pump.

Fan operation — Fan speed can be selected by pressing the fan button (high, medium, or low speed choices). The fan(s) is capable of operation when unit mode is set on either cooling, heating, or auto mode. When the fan(s) is operating in medium or high speed and the unit is equipped with the power ventilation kit, the ventilation fan will operate to provide fresh air. If the mode is set to the AUTO position, then the fan will operate with the outdoor unit compressor.

Cooling mode operation

When the room thermostat senses a demand for cooling, the fan coil relay board is energized. The indoor fan(s) will start at the selected speed (if it is not already operating).

The internal condensate pump (if so equipped) runs when the unit is in cooling mode. As long as the condensate float switch and freeze protection thermostat are closed, the cooling relays in the fan coil unit will close. This energizes the compressor and outdoor fan in the outdoor unit.

The compressor will continue to operate until the room thermostat is satisfied. When the cooling demand is satisfied, the compressor and outdoor fan will stop. If the outdoor unit is equipped with accessory Time Guard® device, the unit will not allow a new call for cooling for 5 minutes. If the system is in the AUTO position, the indoor fan will stop with the compressor. If the unit has the accessory ventilation kit, the ventilation fan will operate whenever the indoor fan is set for medium or high speed.

System safeties — The system is equipped with the following safety devices to protect system components:

A. Condensate float switch (40QA units equipped with accessory condensate pump, cooling cycle only) — If the level of condensate in the drain pan rises too high, the condensate float switch will turn off the compressor and outdoor fan until the condensate level returns to normal. The indoor fan will continue to run.

B. Outdoor Unit Safeties — These units are protected by the following devices:
   - high-pressure switch
   - low-pressure switch (condensing units only)
   - compressor internal overloads
   - outdoor-fan motor internal overload

   NOTE: Outdoor units with scroll compressors are also protected by a high discharge gas temperature sensor and a 2-minute timer to prevent possible reverse rotation of the compressor.

Should any of these devices trip after the compressor is energized, the Cycle-LOC™ protection device will lock out the outdoor unit (turn it off) to prevent cycling on a safety device.

Cooling only thermostats — These thermostats are primarily for cooling applications, but can be used when both cooling and heating set points are required. When set in AUTO mode the space conditions are maintained by calling for either cooling or heating and maintaining at least a 2 degree differential between them. Indoor fan will operate in all instances either in auto mode or in a pre-selected manual mode. Automatic mode operation is as follows:

Auto Cooling mode:	Y	contact will be closed.
	H1	contact open.
Auto Heating mode:	Y	contact open
	H1	contact will be closed.

Other thermostat operating features include the following:

- Center (orange) LED is for AUX heat.
- Right-hand (red) LED indicates a fault — compressor lockout when wired.
- Filter indicator on display screen becomes activated at 250 hrs of run time. To reset, hold fan button in for 5 seconds.
- Terminal block RSI, RS2, RS+V can be used for a remote indoor sensor so that the thermostat can be located elsewhere (secure room).

Guide specifications — outdoor units

Commercial Condensing Units

HVAC Guide Specifications

Size Range: **¾ to 5 Tons Cooling Capacity**
Carrier Model Number: **38AN, 38HDC**

Part 1 — General

1.01 SYSTEM DESCRIPTION

A. Outdoor-mounted, air-cooled split system outdoor section suitable for on-the-ground, rooftop, wall hung, balcony, or under-deck installation. Unit shall consist of a hermetic or rotary compressor, an air-cooled coil, propeller-type blow-thru outdoor fans, accumulator, full refrigerant charge, and control box. Unit shall discharge air horizontally as shown on the contract drawings. Units shall function as the outdoor component of an air-to-air cooling and system.

B. Units shall be used in a refrigeration circuit matched to a duct-free cooling fan coil unit or an approved ducted cooling fan coil unit.

1.02 QUALITY ASSURANCE

A. Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with the NEC.

B. Units shall be constructed in accordance with UL standards.

C. Units shall be listed in the CEC directory.

D. Unit cabinet shall be capable of withstanding Federal Test Standard No. 141 (method 6061) 500-hour salt spray test.

E. Air-cooled condenser coils shall be leak tested at 350 psig air pressure with the coil submerged in water.

1.03 DELIVERY, STORAGE, AND HANDLING

Units shall be shipped in one piece and shall be stored and handled per unit manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory assembled, single piece, air-cooled outdoor unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, compressor, full charge of R-22 refrigerant, and special features required prior to field start-up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of galvanized-steel, bonderized and coated with a baked-enamel finish.
2. Unit access panels shall be removable with minimal screws and shall provide full access to the compressor, fan, and control components.
3. Outdoor compartment shall be isolated and have an acoustic lining to assure quiet operation.

C. Fans:

1. Outdoor fans shall be direct-drive propeller type, and shall discharge air horizontally. Fans shall blow air through the outdoor coil (38HDC only).
2. Outdoor fan motors shall be totally-enclosed, single-phase motors with class B insulation and permanently-lubricated sleeve bearings. Motor shall be protected by internal thermal overload protection.
3. Shaft shall have inherent corrosion resistance.
4. Fan blades shall be corrosion resistant and shall be statically and dynamically balanced.
5. Outdoor fan openings shall be equipped with PVC coated protection grille over fan and coil.

D. Compressor:

1. Compressor shall be fully hermetic reciprocating or scroll type.
2. Compressor shall be equipped with oil system, operating oil charge, and motor. Internal overloads shall protect the compressor from overtemperature and overcurrent. Scroll compressors shall also have high discharge gas temperature protection if required.
3. Motor shall be NEMA rated class F, suitable for operation in a refrigerant atmosphere.
4. Reciprocating compressors shall be equipped with crankcase heaters to minimize liquid refrigerant accumulation in compressor during shutdown and to prevent refrigerant dilution of oil.
5. Compressor assembly shall be installed on rubber vibration isolators and shall have internal spring isolation.
6. Compressors shall be single-phase or 3-phase as specified on the contract drawings.

E. Outdoor Coil:

Coil shall be constructed of aluminum fins mechanically bonded to internally enhanced, seamless copper tubes which are cleaned, dehydrated, and sealed.

F. Refrigeration Components:

Refrigerant circuit components shall include brass external liquid line service valve with service gage port connections, suction line service valve with service gage connection port, service gage port connections on compressor suction and discharge lines with Schrader-type fittings with brass caps, accumulator, pressure relief, and a full charge of refrigerant.

G. Controls and Safeties:

Operating controls and safeties shall be factory selected, assembled, and tested. The minimum control functions shall include the following:

1. Controls:
   a. Time delay restart to prevent compressor reverse rotation on single-phase scroll compressors.
   b. Automatic restart on power failure.
   c. Safety lockout if any outdoor unit safety is open.
   d. A time delay control sequence provided through the fan coil board, thermostat, or controller.
   e. High-pressure and liquid line low-pressure switches.
   f. Automatic outdoor-fan motor protection.
   g. Start capacitor and relay (single-phase units without scroll compressors).
2. Safeties:
   a. System diagnostics.
   b. Compressor motor current and temperature overload protection.
   c. High pressure relief.
   d. Outdoor fan failure protection.

H. Electrical Requirements:

1. Nominal ¾ ton unit shall operate on single-phase, 60 Hz power at 115 v. All other units shall operate on single-phase, 60 cycle power at 208/230 v.
2. Unit electrical power shall be a single point connection.
3. Unit control voltage to the indoor-fan coil shall be 24 v, except 38AN009,012 units which shall supply line voltage.
4. All power and control wiring must be installed per NEC and all local building codes.
5. High- and low-voltage terminal block connections.

I. Special Features (Field Installed):

Certain features are not applicable when the features designated by * are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

* 1. Low-Ambient Kit:

Control shall regulate fan-motor cycles in response to saturated condensing pressure of the unit. The control shall be capable of maintaining a condensing temperature of 100 F ± 10 F with outdoor temperatures to –20 F. Installation of kit shall not require changing the outdoor-fan motor.

* 2. Liquid Solenoid Valve:

This electronically operated shutoff valve shall close and open in response to compressor operation. The valve should be used with all long-lines applications (over 100 ft).

* 3. Winter Start Control (38HDC):

Field supplied and installed winter start control shall permit start-up for cooling operation under low-load conditions and at low-ambient temperatures by bypassing the low-pressure switch for a 3-minute delay period.

NOTE: Winter start control shall be required when unit is intended to operate in cooling at outdoor ambients below 40 F.

Crankcase Heater (units with scroll compressors only):

Unit shall be shipped with a clamp-on compressor oil sump heater.

Guide specifications — high-wall units

Commercial High-Wall Fan Coil Units

HVAC Guide Specifications

Size Range: **¾ to 2 Tons Cooling Capacity**
Carrier Model Number: **40QNB**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Indoor, wall-mounted, direct-expansion fan coil to be matched with the commercial condensing or heat pump units.

1.02 QUALITY ASSURANCE

Unit shall be rated per ARI Standards 210/240 and listed in the ARI directory as a matched system.

1.03 DELIVERY, STORAGE, AND HANDLING

Units shall be stored and handled per unit manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Indoor, direct-expansion, wall-mounted fan coil. Unit shall be complete with cooling/heating (heat pump systems only) coil, fan, fan motor, piping connectors, electrical controls, microprocessor control system, and integral temperature sensing. Unit shall be furnished with integral wall-mounting bracket and mounting hardware.

B. Unit Cabinet:

Cabinet discharge and inlet grilles shall be attractively styled, high-impact polystyrene. Cabinet shall be fully insulated for improved thermal and acoustic performance.

C. Fans:

Fan shall be tangential direct-drive blower type with air intake at the upper front face of the unit and discharge at the bottom front. Automatic, motor-driven vertical air sweep shall be provided standard.

Air sweep operation shall be user selectable. Horizontal direction may be manually adjusted (using remote controller) and vertical air sweep may be manually set.

D. Coil:

Coil shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins shall be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a drain connection for hose attachment to remove condensate. Condensate pan shall have internal trap and auxiliary drip pan under coil header.

NOTE: The 40QNB009,012 units use capillary tubes in the *outdoor* unit for refrigerant control, and the 40QNB018,024 units use the AccuRater® piston refrigerant metering device in the *indoor* unit.

E. Motors:

Motors shall be open drip-proof, permanently lubricated ball bearing with inherent overload protection. Fan motors shall be 3-speed.

F. Controls:

Controls shall consist of a microprocessor-based control system which shall control space temperature, determine optimum fan speed, and run self diagnostics. The temperature control range shall be from 64 F to 84 F. The unit shall have the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. A timer function to provide a minimum 24-hour timer cycle for system Auto. Start/Stop.
3. Temperature-sensing controls shall sense return-air temperature. Indoor-air high discharge temperature shutdown shall be provided.
4. Indoor coil freeze protection.
5. Wireless infrared remote control to enter set points and operating conditions.
6. Auto Stop features shall have integral setback control.
7. Automatic airsweep control to provide on or off activation of airsweep louvers.
8. Dehumidification mode shall provide increased latent removal capability by modulating fan speed and set point temperature.
9. Fan only operation shall provide room air circulation when no cooling is required.
10. Diagnostics shall provide continuous checks of unit operation and warn of possible malfunctions. Error messages shall be displayed at the unit and at the remote controller.
11. Fan speed control shall be user-selectable: high, medium, low, or microprocessor automatic operation during all operating modes
12. A time delay shall prevent compressor restart in less than 3 minutes.

G. Filters:

Unit shall have filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Unit shall operate on 115 v (009), 208-v (012-024), or 230-v (012-024), 60 Hz power supply as specified on the equipment schedule. Power and control connections shall have terminal block connections.

I. Operating Characteristics:

1. The unit shall be matched with an outdoor unit. The combination of the outdoor unit and the indoor-fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ fan speed and entering-air temperature at the evaporator coil of _____ F dry bulb and _____ F wet bulb. Outdoor ambient temperature of air entering the condenser of _____ F.
2. The 40QNB system shall have a minimum listed SEER (seasonal energy efficiency ratio) of _____ at ARI conditions.
3. Outdoor unit shall be rated at ____ Decibels or less at ARI conditions.

J. Refrigerant Lines:

The 009 and 012 units shall have rotatable refrigerant lines for penetration through the wall using flare connections. All units shall have flare connections and a 90-degree suction elbow shall be provided for rear connection.

K. Special Features (Field Installed):

1. Condensate Pump:

The condensate pump shall remove condensate from the drain pan when gravity drainage cannot be used. Pump shall be designed for quiet operation. Pump shall consist of two parts: an internal reservoir/sensor assembly, and a remote sound-shielded pump assembly. The lift capability of the condensate pump shall be 1 to 10 ft (009 size unit) or 3 to 25 ft (012-024 size units). A level sensor on the condensate pan shall stop cooling operation if the level in the condensate pan is unacceptable.

2. Charcoal Filter Kit:

Kit shall include active charcoal filter(s) and required collectors and/or frames. Filters shall aid in removing volatile organic compounds and microparticles from the air in the conditioned space.

Guide specifications — 40QAB ceiling-suspended units

Commercial Ceiling-Suspended Fan Coils

HVAC Guide Specifications

Size Range: **1½ to 5 Tons Cooling Capacity**
Carrier Model Number: **40QAB**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Indoor, under-ceiling mounted, direct-expansion fan coil to be matched with the 38HDC commercial condensing unit.

1.02 QUALITY ASSURANCE

Units shall be rated (when matched with appropriate outdoor unit) per ARI Standard 210/240. Units shall be certified by UL and CSA.

1.03 DELIVERY, STORAGE, AND HANDLING

Units shall be stored and handled per manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Indoor, direct-expansion, ceiling-suspended fan coil. Fan coil shall be shipped complete with cooling coil, fan, fan motor, piping connectors, electrical controls, solid-state electromechanical control system, and ceiling mounting brackets.

B. Unit Cabinet:

Cabinet shall be zinc-coated bonderized steel finished with a baked enamel paint. Inlet grilles shall be attractively styled, high-impact polystyrene. Matching mounting brackets shall be provided.

C. Fans:

Fans shall be centrifugal blower type with air intake in the bottom rear of the unit and discharge in the front. Automatic motor-driven vertical air sweep shall be provided.

D. Coils:

Coils shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins will be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a drain connection for attachment of piping to remove condensate.

E. Motors:

Motors shall be permanently lubricated with inherent overload protection. Fan motor shall be 3-speed.

F. Controls:

Controls shall consist of a solid-state electromechanical control system which shall control space temperature and determine optimum fan speed. The temperature control range shall be from 64 F to 84 F. The unit shall have the following functions as a minimum:

1. An automatic restart after power failure at the same operating conditions as at failure.
2. Non-programmable thermostat to provide cooling and heating set points and day/night setback modes.
3. Wired control to enter set points and operating conditions.
4. Filter status indication after 250 hours of indoor fan operation.
5. Automatic airsweep control to provide on or off activation of airsweep louvers.
6. Cooling mode to provide modulating fan speed based on difference between temperature setpoint and space temperature.
7. Fan only operation to provide room air circulation when no cooling is required.
8. A 50-ft indoor to outdoor control connection cable shall be provided with the fan coil unit.
9. Fan speed control shall be user-selectable: high, medium, low, or automatic operation during all operating modes.
10. A time delay shall prevent compressor restart in less than 2 or 4 minutes (adjustable).

G. Filters:

Unit shall have filter track with factory-supplied cleanable filters.

H. Electrical Requirements:

Unit shall operate on a 208-v or 230-v, 60 Hz power supply as specified on the equipment schedule.

I. Operating Characteristics:

1. The unit shall be matched with an outdoor unit. The combination of the outdoor unit and the indoor-fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ fan speed with entering-air temperature at the evaporator coil of _____ F dry bulb and _____ F wet bulb. Outdoor ambient temperature of air entering the condenser of _____ F.
2. The system shall have a minimum listed SEER (seasonal energy efficiency ratio) of _____ at ARI conditions.

J. Special Features (Field Installed):

Certain features are not applicable when the features designated by * are specified. For assistance in amending the specifications, contact your local Carrier Sales Office.

* 1. Internal Condensate Pump:

The condensate pump shall remove condensate from the pan when gravity cannot be used. The lift capability shall be 20 inches. Float control shall be in the condensate sump to shut unit down in case of pump malfunction.

2. Fresh Air Intake Kit:

Kit shall include filter and duct connections to provide for outdoor ventilation air.

3. Indoor Guard Kit:

Kit shall include a guard for the discharge grille to prevent objects from entering the air sweep mechanism.

4. Electronic Programmable Thermostat:

Thermostat shall be commercial grade and shall provide 7-day, 4-event scheduling. Integral subbase shall be included. Thermostat shall also provide 3-speed fan switchover capability, air sweep auto changeover, and shall not require a battery to retain memory.

5. Power Ventilation Kit:

Kit shall be used with the accessory fresh air kit when fresh air must be ducted over long distances. The kit will overcome duct static to provide a constant supply of ventilation air. Kit consists of booster fan and adjustable speed control to properly balance fan to achieve required airflow rate.

Guide specifications — 40QKB in-ceiling cassette units

Commercial In-Ceiling Cassette Fan Coil

HVAC Guide Specifications

Size Range: **1½ to 3 Tons Cooling Capacity**
Carrier Model Number: **40QKB**

Part 1 — General

1.01 SYSTEM DESCRIPTION

Indoor, in-the-ceiling-mounted, direct-expansion fan coil to be matched with the 38HDC commercial condensing unit. Units shall fit standard 2 ft x 4 ft ceiling grid.

1.02 QUALITY ASSURANCE

Unit shall be rated (when matched with appropriate outdoor unit) per ARI Standard 210/240. Units shall be certified by UL and CSA.

1.03 DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

1.04 WARRANTY (For Inclusion By Specifying Engineer)

Part 2 — Products

2.01 EQUIPMENT

A. General:

Indoor, direct-expansion, low-profile (11¾-in. high) in-ceiling fan coil. Unit shall come complete with cooling coil, fan, fan motor, piping connectors, electrical controls, condensate pump, and hanging brackets.

B. Unit Cabinet:

Cabinet shall be constructed of zinc-coated steel. Fully insulated discharge and inlet grilles shall be attractively styled, high-impact polystyrene. Cabinet shall have filter tracks and cleanable filters which shall be accessible from below with a ¼-turn fastener. Adjacent room cooling to be provided by a simple knockout in the cabinet side panel, and cabinet shall have provisions to accommodate a limited amount of ductwork, if desired.

C. Fan:

Fan shall be a centrifugal, direct-drive blower type with air intake in center of the unit and discharge on the perimeter. Air louvers shall be adjustable for 2, 3, or 4-way discharge.

D. Coil:

Coil shall be copper tube with aluminum fins and galvanized steel tube sheets. Fins will be bonded to the tubes by mechanical expansion. A drip pan under the coil shall have a factory-installed condensate pump and drain connection for hose attachment to remove condensate.

E. Refrigerant Metering Device:

The unit shall have a refrigerant metering piston and body.

F. Motors:

Motor shall be totally enclosed and permanently lubricated with inherent protection. Fan motor shall be 3-speed.

G. Controls:

Controls shall be 24 v, and shall be easily operated by the user from a wall-mounted control unit. Float control shall be in the condensate sump to shut unit down in case of pump malfunction. A wall-mounted electro-mechanical thermostat with 3 fan speed selections, and an auto./manual switch shall be supplied for field installation. The R-22 refrigerant is controlled with a piston-type refrigerant metering device, and evaporator coil freeze protection shall be provided.

H. Operating Characteristics:

1. The unit shall be matched with an outdoor unit. The combination of the outdoor unit and the indoor-fan coil unit shall have a total net cooling capacity of _____ Btuh or greater at conditions of _____ cfm entering-air temperature at the evaporator coil of _____ F dry bulb and _____ F wet bulb. Outdoor ambient temperature of air entering the condenser of _____ F.
2. The system shall have a minimum listed SEER (seasonal energy efficiency ratio) of _____ at ARI conditions.

I. Thermostat:

The thermostat shall be commercial grade to control unit operation, and shall provide 3-speed fan switchover capability with continuous and automatic fan operating switch.

J. Special Features (Field Installed):

1. Power Ventilation Kit:

   Kit shall allow ventilation of the conditioned space with outdoor air. The kit shall include filter, booster fan, and controls.

2. Fresh Air Intake Kit:

   Kit shall include filter and duct connections to provide for outdoor ventilation air.

3. Electronic Programmable Thermostat:

   Thermostat shall be commercial grade and shall provide 7-day, 4-event scheduling. Integral subbase shall be included. Thermostat shall also provide 3-speed fan switchover capability, air sweep, auto changeover, and shall not require a battery to retain memory.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.